


**Issue 16**

**90p**

SCORE 34
FREEWAY ACE!
(c)1985 by Paul Lay

*Listings Inside*

**Turn The Tables**
**Autocar Graph**
**Black Box**
**Draughts**

**63 BOOKS REVIEWED!**

**plus... Tips with ATARIWRITER**

ATARI

**ATARI IN HANNOVER**

# Silicon Chip

# No. 1 FOR ATARI*

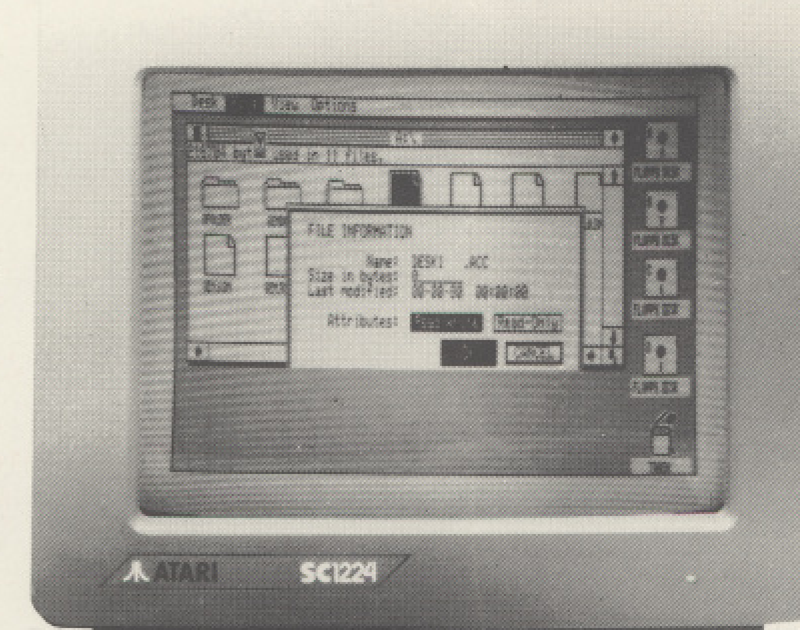
## Atari 520 ST

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| | |
|---|---|
| Atari 520 ST | **£599.99** |
| + 500k Disk Drive | **£699.99** |
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The prices of the ST from SILICON CHIP Ltd, include Basic, Logo, a word Processor, GEM Draw and GEM paint.

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** 1st Dealer for 1029 Printers.*
** 1st Dealer with our own Software House for Software Support.*
** 1st Dealer for 520 ST?*




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**July/August 1985**

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Page 6 is a user's magazine and relies entirely on readers' support in submitting articles and programs. The aim is to explore Atari computing through the exchange of information and knowledge and whilst we cannot, unfortunately, pay for articles published we hope that you will gain satisfaction from seeing your work published and in turn we hope that you will learn from articles submitted by other readers. All published material is eligible for awards in the Annual Readers Poll and may receive additional Editorial awards as announced from time to time in the magazine.





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**Copy date for the next issue is 22nd July 1985**

## Editorial

# MORE BUT LESS?

Several software companies who have not previously supported Atari are now writing or converting programs for the 130XE or the 800XL - at long last. That's the good news but the bad news is that they may well find it more difficult to get their products to you.

Since the last issue of PAGE 6 no less than six of the retailers to whom we supply the magazine have gone into liquidation or have 'disappeared' and the situation may well take some time to settle as the genuine retailers try to hang on whilst the 'get rich quick' merchants or the plain incompetent bite the dust in a market which has proved to be smaller than many peoples dreams. The sudden overnight disappearance of Software World in Birmingham unfortunately affects more than those to whom they owe money, as many owners begin to wonder who they can trust. Part of the problem is just human nature for we tend to be impressed by the big and the flamboyant and assume that the retailer with the biggest shop is the best. When we see a small retailer or mail order company operating from a house in the suburbs we tend to be wary and wonder whether they can be trusted when in fact it should be the reverse. There *are* good independent retailers with big shops - a few - but many in this day and age will struggle to meet the overheads. If you can pay your money and take the goods, fine but what about Mail Order? The small mail order company operating, perhaps, from home does not do so because it does not want a big impressive shop but simply because the owner realises that he cannot afford a shop. Lower overheads mean a greater chance of success and providing the company gives a good service why should the situation or premises matter?

Of course there will be small companies who have problems too but the problem for all who have been stung so far is who to trust. There *are* mail order companies who I feel are conducting their business in an efficient way and you should not automatically fear mail order - it is unfortunately the only way that many owners can get Atari software. The ones who disappear tarnish those who continue to provide a good service and only time will settle the dust.

I don't know the answers but I feel that it is high time that legislation was introduced to make it more difficult to start a business and nigh on impossible without guarantees to start another after going into liquidation. You may argue that in these days of high unemployment every opportunity should be given to those who want to start businesses but make it too easy and the cowboys and the plain inept will take a lot of genuine small businesses down with them.

We must all keep supporting those who we can trust but need to tread more warily.

Enough said. Enjoy this issue!

Les Ellingham

## NEW BUSINESS SOFTWARE FOR XL AND XE

Precision Software Ltd. are to convert several successful business software packages to the Atari 800XL and 130XE for marketing in September.

The titles which are currently available for the Commodore 64 and Apple are Superscript, Superbase STARTER and Supertype which are, respectively, a word processor, database and typing trainer. The Database in particular, if it lives up to the specifications of the existing versions, promises to be what serious users in the U.K. have waited many years for. There have been few serious products for the Atari with such high specifications and certainly none easily available in this country to the home user.

Prices are not yet finalised but will be affordable to any user interested in a database or word processing applications.



*Miracle Technology could well put the final nail in the coffin of the 850 interface with their new DATARI RS232 interface. Available as a package with MULTI-VIEW-TERM software it will enable any modem to be used with your ATARI. Whilst access to 300 baud Bulletin Board Systems has been relatively easy to date, DATARI will open up the full world of VIEWDATA systems including PRESTEL, TELECOM GOLD and others. Price for the complete software and interface package is £59.95 from your retailer or, by adding £1.15 p&p, from Miracle Technology (UK) Ltd, St. Peters Street, Ipswich, IP1 1XB.*

## BASIC XE!

Users of O.S.S.'s BASIC XL will be more than pleased to know that BASIC XE for the 130XE will be available in mid-July from Software Express International in Birmingham. BASIC XE will contain all of the commands of BASIC XL with the addition of an EXTEND command allowing access to 62k of the top 64k of memory. In addition the features of the TOOL KIT, previously available seperately, will be built in to the cartridge. Price in the U.K. will be £69.99.

For new owners, BASIC XE will add several new commands to ATARI BASIC allowing greater control over Player Missiles, string handling and many other features. It is highly recommended to any owner seriously interested in programming.

## TWO MORE COMPUTERS!

### ATARI AT CES

Despite several reports from the 'ATARI knockers' the Company did make an appearance at the Summer Consumer Electronics Show in Chicago and showed two more models of the ST. The 260ST is a 256k model and the 260STD comes with a built in 3½" disk drive. Prices are said to be $399 and $499 respectively. After seeming to have abandoned the 'middle' market by dropping the 130ST, Atari may well have something up its sleeve after all.

Also strongly rumoured for many months and finally shown at CES is a Compact Disk ROM unit for use with the ST capable of holding 500 Mb! Atari are said to have purchased the rights to a 26 volume encyclopaedia for use with this unit. The unit will allow searches down to word level throughout the encyclopaedia with an access time of something like 3 seconds to find over 50 references! The encyclopaedia takes only 120Mb of the available disk space!




*What's this? It's a Disk Notcher enabling you to use the other side of single sided disks with great ease. You can fiddle around with a hole punch or use a scalpel (blood can damage disks!) but with this little devil you just slip your disk in and get a neat square notch identical to the one on the other side, first time every time and in exactly the right position. Price is just £5.99 plus £1.50 p&p from Wootton Computers, 116 Edleston Road, Crewe, CW2 7HD.*

# News

## DOS 2.5 AVAILABLE

DOS 2.5 is currently being widely circulated in the States but at the time of writing availability in this country is not known. ATARI are said to be sending copies to User Groups in the U.S. for 'non-commercial' distribution and it is to be hoped that it will be available here at very little cost. This new DOS is fully compatible with both the 810 and 1050 drives and will automatically use the enhanced density of the 1050 if available. A unique feature is that the 'manual' is on the reverse of the disk thus cutting down costs and making distribution much easier.

DOS 2.5 will become the new standard for all ATARI 8-bit micros and existing DOS 3.0 owners are strongly recommended to get a copy as soon as possible.

# Readers write

## THANK YOU

Dear Les,

You kindly published a letter of mine at the beginning of the year asking for software for the new computer in the childrens ward of the hospital where I work.

The response has been splendid and we have received many useful items from all parts of the country and even from Italy! I have personally replied to all those who included their address but several items were sent anonymously and I wondered if you would publish a small note of thanks on behalf of the children of ward C2 to all those who have been so generous.

Best wishes and many thanks.

Paul Boggust
Beckenham, Kent

## WHY SO EXPENSIVE?

Dear Sir,

I notice that BOUNTY BOB STRIKES BACK is currently available on a 40k ROM costing £49.95. This is absolutely ridiculous as the game is available on cassette for the Commodore 64 at only £9.95.

Why is it that Atari owners are always being asked to pay these ridiculous prices? There is no reason why this game should not be available on cassette as anybody who is willing to pay £50 for a game has surely upgraded their machine to 48k? The new Atari's look set to take off in a big way but will only do so if they have a solid range of cheap cassette software to equal the Commodore and Spectrum. What is the point of buying a reasonably priced computer if the software is too expensive? Granted much Atari software is coming down in price but there is still a tendency for many games to be on disk only. The average Commodore and Spectrum owner runs a cassette based system and, if the XE range is to lure these potential customers away from their existing systems then the software companies must stop this disk only bias. Why on earth should games like Ghostbusters, Mr Robot, Flak and Loderunner etc. be available on cassette for the Commodore but not the Atari? And why do games such as Boulderdash, Bristles and Flip 'N' Flop cost twice as much for the Atari than the Commodore?

I sincerely hope that BOUNTY BOB does not sell. If any owner buys it he must have more money than sense as you can buy a new 800XL for barely twice the price of this cartridge.

Steve Craig
Motherwell

°° *Most people tend to blame the retailers for such high prices but the blame really lies with those companies such as U.S. Gold who have licensing agreements with the U.S. software companies. In the case of BOUNTY BOB those retailers who sold the ROM (imported from the U.S.) did so partly as a service to those who had waited a long time for its release when there was no indication of an Atari release from U.S. Gold. Granted they make more profit from a £50 item but most retailers would prefer to sell lower priced software in volume than take chances on stocking high priced items.*

*So who is to blame? The answer is complex but the only companies that can change the situation are those who negotiate the U.K. licensing rights to U.S. software. Unfortunately their arguement for higher prices for Atari, or non-availability, is that the products do not sell in enough quantity to justify the expense in producing and promoting them. Part of this is history but the blame also lies with owners and Atari themselves. Any owner who has a pirated copy of a program, for whatever reason, is to blame. Atari is to blame for still failing to advertise their products or re-think their marketing.*

*How about a radical step? What about Atari setting up or backing a company to negotiate the U.K. rights to software that the other companies are not interested in? Sell them on cassette to retailers at good margins and get them in the shops alongside their computers. It would probably cost no more than a major hardware advertising campaign and would certainly lure other computer owners away from their systems. Probably easier said than done but worth investigating?*

*Probably the only thing you and I can do is to write to U.S. GOLD and BEYOND Software and other companies every time they advertise software and ask them for the Atari version. If enough people write then they will be released and at the right price. But will enough people write? Most will feel that they shouldn't have to and maybe they are right.*

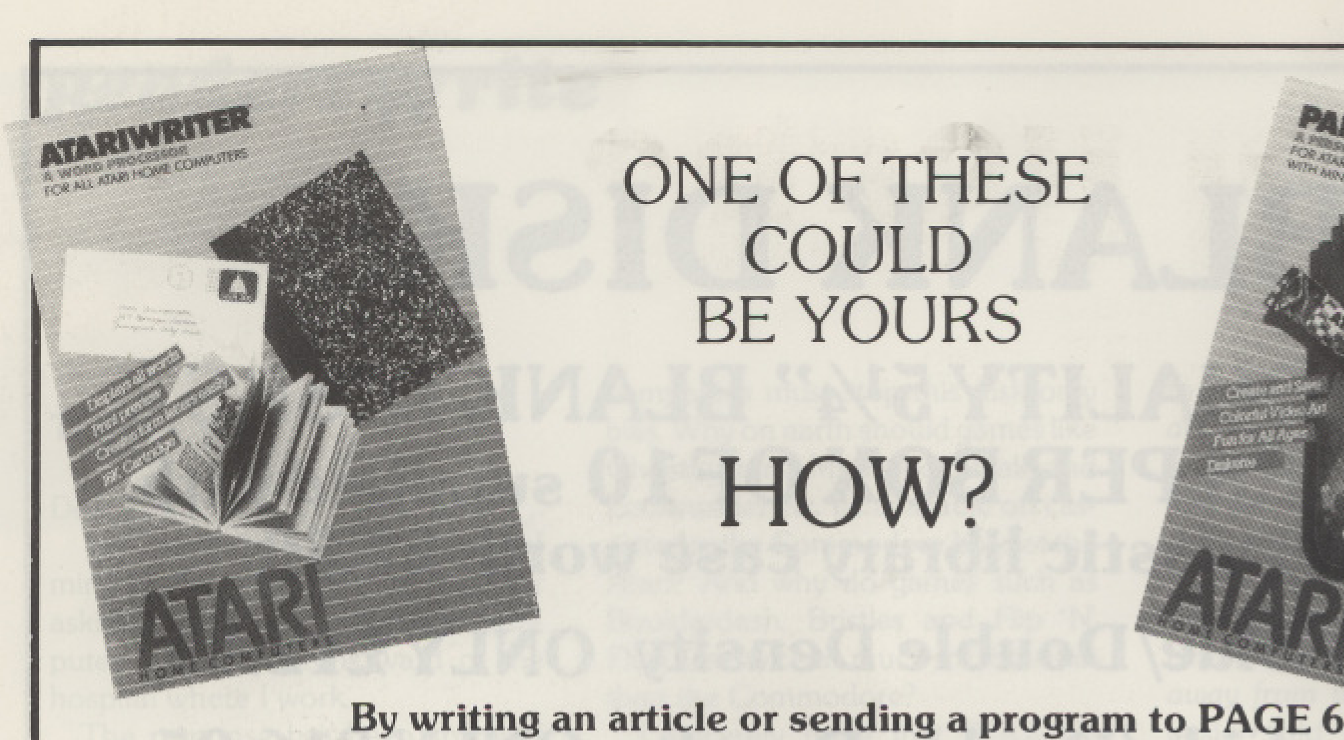
## THANKS AGAIN

Dear Les,

As FIRST STEPS is currently running the A-Z of BASIC I wondered if I could use the letters page to thank all those who voted for the column in the last Readers Poll. Your support is much appreciated. I will reply to all readers who write with queries provided they enclose a stamped addressed envelope but I now have several letters from people who did not enclose one. If anyone has not had a reply from me could I ask them to please write again ensuring that they enclose a stamped addressed envelope.

Mark Hutchinson
BAUG Software
P.O. BOX 123
BELFAST, BT10 0DB

°° *Mark has spent a great deal of his own time in helping readers with their problems. If you write to anyone for advice and expect a personal reply you should enclose a stamped addressed envelope. Is it really fair to ask someone to spend an hour of their time giving free advice if you can't be bothered to spend 17p on the return postage?*







# ONE OF THESE COULD BE YOURS

# HOW?

**By writing an article or sending a program to PAGE 6**

Over the next five issues we will be giving away an AtariWriter cartridge to the author of the best article received and a Paint! cartridge to the author of the best program submitted. All contributions received will be re-considered prior to publication of each issue so that if you do not receive the award for a particular issue, your article or program will still be in the running for the next issue. In addition to this all articles or programs published will still be eligible for awards in the annual Readers Poll so it really is worth writing an article or sending in a program.

Articles may be on any subject of interest to Atari users and should be of at least one magazine page length. Diagrams, charts, illustrations or even photgraphs(!) may be included if you wish. Programs can be for any memory size and may be games, utilities or more serious programs provided they are of general interest. If possible please submit articles and programs on a DOS 2 disk (which will be returned or replaced by a disk from the PAGE 6 library). Any DOS 2 compatible word processor may be used. If you do not have a disk drive please use cassette but ensure that TWO copies are recorded, one of which should use LIST "C:". Hard copy listings of programs are not required but documentation explaining how to use the program should be included. Typewritten or handwritten articles are still welcome if you cannot manage disk or cassette and will be given equal consideration. Written program listings will not however be accepted.

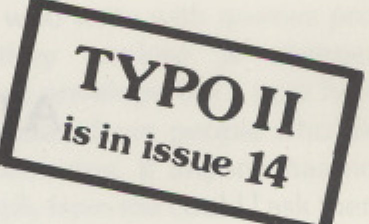
Let's see your articles and programs. Best of luck!

**This issue the awards go to Paul Lay who receives Paint! for his program FREEWAY ACE! and R.A.Matulko receives an Atariwriter for his recent reviews of SpartaDos and U.S.Doubler.**

# LISTING CONVENTIONS - READ BEFORE TYPING

**The program listings in PAGE 6 begin with a special code which should not be typed in. This is an error checking code used with TYPO II, a program which appeared in issue 14. We cannot recommend TYPO II too highly as it will tell you immediately if you have made a typing mistake. Issue 14 is available as a back issue.**

**The listings are prepared to match exactly what you see on screen. The following chart shows all of the characters used as they would appear in a listing. CONTROL characters and Inverse tend to join together in listings so care should be taken over these. Use TYPO II to check your listing and ALWAYS save a copy of any program before running it.**




| Lower case | Inverse lower | Upper case or Shift | Inverse Upper or Shift | CTRL | Inverse CTRL |
|---|---|---|---|---|---|
| 1 | | ! | | | |
| 2 | | " | | | |
| 3 | | # | | | |
| 4 | | $ | | | |
| 5 | | % | | | |
| 6 | | & | | | |
| 7 | | ' | | | |
| 8 | | @ | | | |
| 9 | | ( | | | |
| 0 | | ) | | | |
| < | | | | | |
| > | | | | | |
| a | | A | | | |
| b | | B | | | |
| c | | C | | | |
| d | | D | | | |

| Lower case | Inverse lower | Upper case or Shift | Inverse Upper or Shift | CTRL | Inverse CTRL |
|---|---|---|---|---|---|
| e | | E | | | |
| f | | F | | | |
| g | | G | | | |
| h | | H | | | |
| i | | I | | | |
| j | | J | | | |
| k | | K | | | |
| l | | L | | | |
| m | | M | | | |
| n | | N | | | |
| o | | O | | | |
| p | | P | | | |
| q | | Q | | | |
| r | | R | | | |
| s | | S | | | |
| t | | T | | | |

| Lower case | Inverse lower | Upper case or Shift | Inverse Upper or Shift | CTRL | Inverse CTRL |
|---|---|---|---|---|---|
| u | | U | | | |
| v | | V | | | |
| w | | W | | | |
| x | | X | | | |
| y | | Y | | | |
| z | | Z | | | |
| - | | _ | | | |
| = | | \| | | | |
| ; | | : | | | |
| + | | \ | | | |
| * | | ^ | | | |
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| / | | ? | | | |

| | |
|---|---|
| ESC ESC | |
| ↑ | ESC CTRL - |
| ↓ | ESC CTRL = |
| ← | ESC CTRL + |
| → | ESC CTRL * |
| | ESC SHIFT CLEAR |
| | ESC DELETE |
| | ESC TAB |
| | ESC SHIFT DELETE |
| | ESC SHIFT INSERT |
| | ESC CTRL TAB |
| | ESC SHIFT TAB |
| | ESC CTRL 2 |
| | ESC CTRL DELETE |
| | ESC CTRL INSERT |
| | INVERSE SPACE |

# 130XE

# A WINNER?

## Reviewed by Les Ellingham

I have to admit that when Silica Distribution Ltd offered to loan me a 130XE for review I was extremely concerned. It wasn't that I did not want to see the machine, it was just that I had grave doubts about whether I could write a review of what is basically an 800XL in a new case, with a bit more memory for which there is no software! Now I have no doubts. Whilst I would never have recommended that anyone trade in an 800 for an 800XL, I would certainly advise owners to think about trading in for a 130XE. It's not that you get a great deal more, it's just that what you do get is *quality*, top quality.

I will assume that most of you are already familiar with one of the existing Atari computers and will not therefore go into detail about what the machine can do. The *basic* machine is an 800XL with some changes in the chips and circuits which merely allow the machine to run more smoothly and efficiently. There are no extra graphics modes or commands although the machine comes with Revivsion C BASIC which should iron out all the remaining bugs. The major changes are the casing, the keyboard, the cartridge slot and the screen display. Some are good, some are not. Let's start with the good.

### THE GOOD POINTS

The first obvious change is the style of the casing which is smaller than before and is finished in light grey with an ivory keyboard and with ventilation slots and 'function' keys set at a 45 degree angle. It certainly looks classy and design-wise will hold its own against any computer you care to name.

Okay, so it *looks* good but what does it feel like? Beautiful, just beautiful. General consensus amongst those who own several computers is that the keyboard is very good indeed. The keys are 'dished' in that they curve away and up to the top row which at first looks as though it may be difficult to handle, but in use it is simplicity itself. The keys have an excellent feel and, whilst I am not a totally competent typist, they allowed entry of text at a much faster rate than either an 800 or an 800XL. It is certainly a keyboard that a qualified typist/word processor would feel at home with. The 'function' keys look as though they could be dangerous because set at that angle it looks too easy to press the wrong key by mistake and as System Reset is right next to Option that could prove fatal. In practice however I found that there were no problems, it was actually quite hard to press the wrong key. The position along the top of the keys is not as convenient as before especially when using Atariwriter as it is virtually impossible to press the Select or Option keys with Insert or Delete without changing hands over or doing some contortionist tricks.

### A SUPER SCREEN

The screen display is *brilliant!*. I have spoken to several people who use more than one computer and they have all confirmed that the clarity of the video image of the 130XE is amazing. The colours are less saturated, which may require some adjustments to your set, but in return you get an amazing quality image. I had been displeased with the screen image on my 800 for some time and had thought that my TV (a 10 year old Sony) was on its last legs. But hooking up the 130XE dispelled this. The difference in quality was as great as using a monitor with the 800. If you

had been thinking of buying a monitor, you may be better off looking at a 130XE first!

## WHAT'S NOT SO GOOD?

Now on to the bad points. The cartridge slot is at the rear of the machine just right of centre and quite low down and is, frankly, a real pain. It defeats part of the object in having a compact unit for you have to allow five or six inches of space behind the computer to plug and unplug ROM cartridges and most of the time you are forced to pick up the machine to see what you are doing. Maybe it is no problem if you plug in a game and play away all night but if you are using Atariwriter and a few utilities it becomes extremely tedious to keep trying to find just where that slot is.

The other irritation I found with the machine is that it takes a long, long time to recycle when switched off and on. Cassette users will probably not notice but if you try to reboot a disk by just flicking the switch off and on, nothing will happen. It takes something like five seconds to set itself up again and, if you are used to a quick flick of the switch to re-boot, this is a *long* time to wait. You literally have to sit and count to five or get extremely frustrated and annoyed.

## THAT EXTRA MEMORY

The major difference with the machine is of course the extra 64k of memory. Lest you be misled, this does not mean that you can type ? FRE(0) and get something like 128,000 because, being an 8-bit micro, the 130XE can only access 64k at one time. Atari's solution is to enable the extra 64k to be bank-switched in 16k blocks to either the main processor or to the ANTIC video chip or both. This means that the processor can continue to run your main program whilst graphics information is displayed from the top 64k of RAM. Very clever and with a lot of potential.

Accessing the extra RAM is very easy from BASIC requiring just a single POKE and a small mathematical calculation. This is clearly explained in the manual (What an Atari with a manual? Yes, but more of that later!). I had thought at first that the extra 64k would be something of a white elephant but having seen how it works all sorts of intriguing possibilities are opened up. The most obvious is the storage of extra program information such as used in text Adventures or graphics which could cut down or eliminate disk swapping on larger games. For cassette users it would be possible to use the top 64k as a 'disk-drive' thus opening up many of the random access capabilities of databases and the like. Information could be stored, worked on, sorted or randomly accessed from memory and saved to tape only when it was in a finalised condition. Many of the more serious applications which are cumbersome or impossible for tape users will be made available and this is even within the realms of the 'do-it-yourself' BASIC programmer.

## SUPER FAST UTILITIES

The most immediate advantage of this extra memory is already with us in the shape of DOS 2.5. This new Disk Operating System has a 'RAMDISK' option which allows the top half of memory to be set up as Drive #8 which means that you can have DUP.SYS resident in memory for immediate access. Halfway through a BASIC program and need DOS? Just type DOS, use the utility, and go back to your BASIC program without accessing a physical disk! The top half of memory can be used exactly like a disk drive. You can save or delete files, rename them and generally do what you can with a physical disk. When you are happy with your 'memory disk' just copy the contents of 'Drive #8' to Drive #1. What a time saver!

## EVEN A MANUAL!

What else? Oh yes, you actually get a manual. 130 pages of information about the 130XE with example programs, explanations of the BASIC words and more. It even gives you a sample program of Player Missile Graphics which the 'old' Atari didn't even seem to know existed. Not the best manual in the world - you will still need to go on to other books - but at last a positive step in the right direction.

## FINAL THOUGHTS

Several steps in the right direction is just what Jack Tramiel seems to be achieving. First class styling, extra memory ahead of the competition, a reasonable manual and the promise that future Atari label software will use the full potential of the machine. Atari are looking ahead whilst still thinking of existing owners. Most of the available software will run on the 130XE and if it doesn't, the Translator works just fine.

From a sceptical beginning I am now hooked on the 130XE, despite its one or two drawbacks. Nothing would have made me part with my beloved old 800 for an 800XL but going back to it now seems like jumping off a thoroughbred to take a ride on an old, but loyal and faithful, carthorse.

**ATARI 130XE**

Price £169.99

| | |
|---|---|
| FOR: | Design<br>Keyboard<br>Screen Display<br>Extra Memory<br>Manual |
| AGAINST: | Awkward cartridge slot<br>Awkwardly placed 'function' keys<br>Slow recycling time |

**Support your retailer but don't miss out.**

**Due to some changes in distribution your retailer may no longer stock PAGE 6. The only SURE way to get it is to SUBSCRIBE. Do it now.**

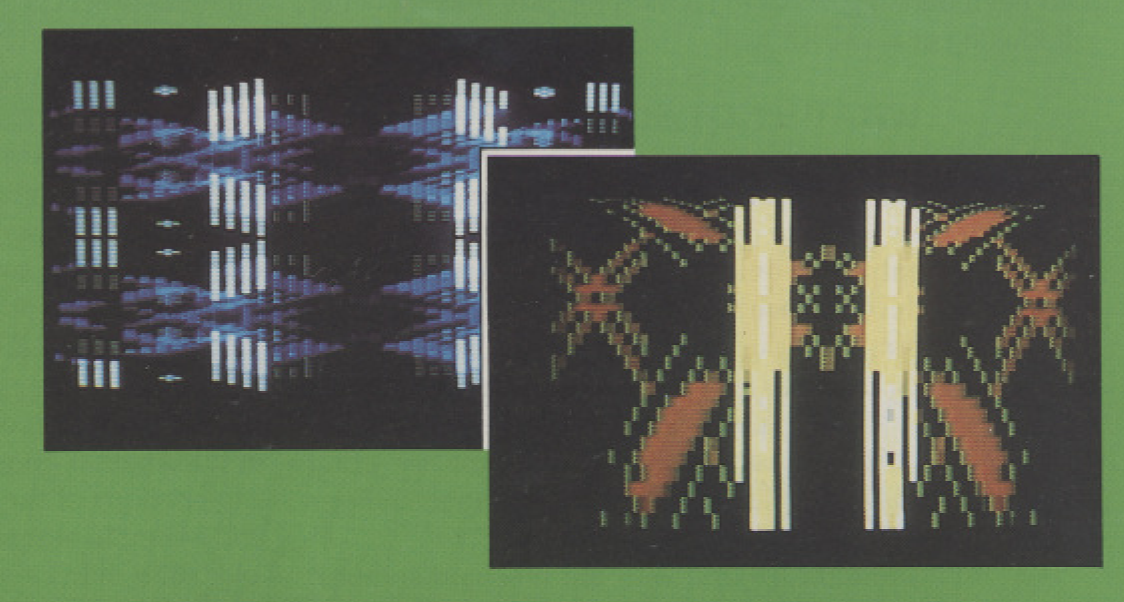
# Review

COLOURSPACE is the Atari development of Psychedelia which is available for other micros. Jeff Minter changed the name because the program grew in stature so much on its translation to the Atari that Jeff virtually considers it to be a new program. He states in the manual that "The difference between Colourspace and Psychedelia is as pronounced as the difference between a Mini and a Ferrari"! That's what translations to the Atari should be. It is about time programmers realised just how much more powerful the Atari is.

Colourspace is going to be difficult to put into words. It is easier to describe what it is not. It is not a game, it is not a utility, it is not an adventure, you do not score points, there is no goal, no competition, no final outcome. What on earth is it then? It is what no software company has come up with for many years - something quite unique. I don't know of any other program quite like it or any program that will show off the Atari's colour and hardware capabilities in such a dynamic way.

Let's start by saying that you will either be mightily impressed or singularly unimpressed with Colourspace, it depends on your own sensibilities, on the way you perceive light and sound, on whether you can 'see' sounds and 'hear' colours. The best analogy is with the live performance of rock music, but if that turns you off read on anyway for you can use the program in any way you wish. If you have ever been to a rock concert where the stage lights and effects enhance the performance and create a new sense of 'sight and sound' combined, you will know exactly what Colourspace is. Stick on some headphones or turn the stereo up loud and you will have your very own light show, controlled entirely by you in any way your mood takes you. On its own Colourspace is pretty - very pretty - but marry it with music and get the timing just right and something magic happens. Something that does not exist in either the music or in the program but which you will feel instinctively when you create just the right blend.

If you do not understand all this business of lights and music, maybe Colourspace is not for you but try it anyway. Light and movement enhances any type of music - that's what ballet and opera and stage shows are all about - and you may well find that your favourite music takes on a new character and has new depth. At worst






you will end up with a truly amazing demo of the capabilities of your Atari and that can't be bad can it?

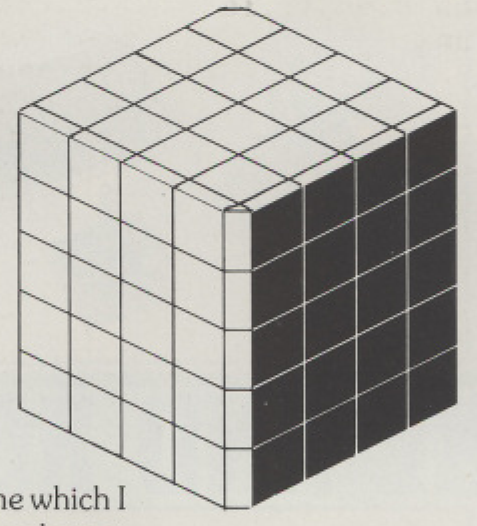
The manual for Colourspace runs to 16 pages and only tells you how to use the various facilities of the program. It does not explain what you can achieve for only you can determine that. The results depend on your own imagination and ability. The program is described as a 'light synthesiser' and it is exactly that an instrument producing colour and light which you can learn to 'play' like any other musical instrument. The more experienced you become the better will be the results but, unlike conventional instruments, you can gain enjoyment from it even if your talents are very limited - or you can just sit back and watch someone else play.

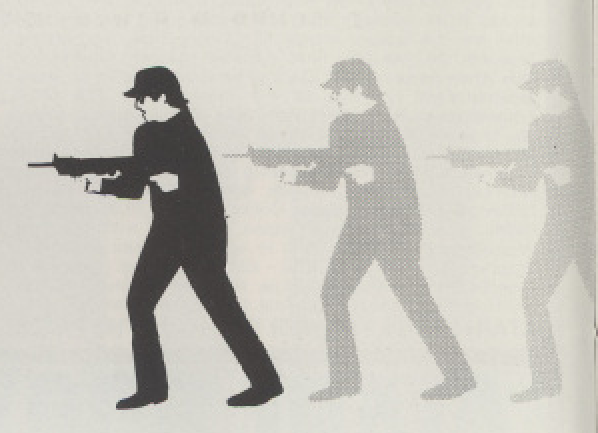
The range of light and colour and movement is enormous, from pre-set patterns to user defined colours or graphics. Foreground patterns overlaying dynamic effects, 'curved' screens, multiple images and more. Literally thousands of combinations and every one controlled by you using the joystick. You can record sequences in memory and play them back or save sequences on tape. You can use the program with another person each creating their own patterns or you can interact with the computer. You can create the gentle and soothing or the dynamic and aggressive. Pretty patterns or meaningful colour 'lyrics'. In short you can come close to expressing in a tangible form what you feel from music.

The program has far too many possibilities to go into great detail so I will finish with a recomendation. If you are into rock music, buy it without hesitation. If not, try it as something quite unique and you may end up with experiences you did not expect. If you are still unconvinced, try to get along to the PCW Show in September where Jeff Minter promises something quite spectacular.

Just one gripe. Colourspace is available only on cassette which is just plain crazy particularly as it has the facility to save unlimited sequences. The Atari owners likely to be most impressed by the program will be sufficiently committed to their system to require it on disk. Why spoil a graphic masterpiece by putting it in the wrong frame?

# BLACK BOX





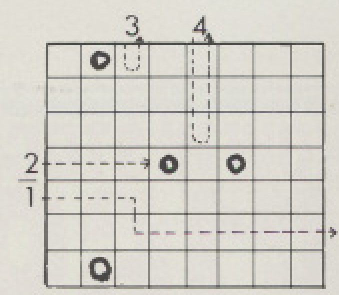
## by Paul Ford

BLACK BOX is based on an original board game which I once purchased several years ago but which now no longer seems to be on sale. I felt that it was a good game for computerisation and decided to write a version for the Atari to enable me to play the game once more. The resulting program was written entirely on New Years Day. What a way to start the year!

The game seems at first sight to be quite complicated but a study of the 'rules' and a few practice games should make things clear. The object is to deduce the position of four 'ATOMS' placed at random on the grid, by firing 'RAYS' into the box. The ATOMS will affect the RAYS in one of three different ways depending upon their position on the grid and the position of an ATOM can be deduced by the path the RAYS take which is indicated by entry and exit points. The movement is similar to the actual technique used to determine atomic structure.

Use a joystick in port 1 to position the green cursor on the perimeter of the box at a point where you wish to fire a RAY. Press the joystick button and watch for the exit point of the RAY if there is one. The RAY may be affected by the ATOMS in any of the following ways

1) DEFLECTED off an ATOM (Path 1)
2) ABSORBED by an ATOM in a direct collision (Path 2)
3) REFLECTED back along its path (Paths 3 & 4)




Markers will appear on the perimeter of the grid depending on the action occuring. ABSORBTIONS will be shown by a red asterisk at the *entry point only*. REBOUNDS are shown by at white asterisk at the *entry point* and a coloured symbol will indicate both *entry and exit points* for a RAY which exits from a different point.

Once you think that you know where an ATOM is placed you may move the cursor inside the grid and press the fire button to mark the position. There are four ATOMS in all and once you have marked four positions you may press START to see if your guesses are correct. A yellow ATOM will indicate a correct position whilst any ATOMS you failed to find will be shown in blue. Any markers incorrectly placed will remain red.

**SCORING** The object is to obtain the *lowest* score. One point is scored for each RAY marker and five points for each incorrectly placed marker. A full game consists of 5 rounds.

```
EH 0 REM ********************************
OI 1 REM *          BLACK BOX           *
SZ 2 REM *                              *
RM 3 REM *    by PAUL FORD - 1/1/85     *
TB 4 REM *                              *
EC 5 REM * ---------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EO 7 REM ********************************
NN 8 REM
UY 10 DIM BOX$(100),MARK$(16):GOSUB 9010
YH 20 GOSUB 7000:SC=0:POKE 709,54
TY 30 FOR GM=1 TO 5
KH 40 GOSUB 8000:GOTO 50
DV 45 NEXT GM:NPY=PMBASE+536:Q=USR((1536)
   ,NPY,OPY):OPY=NPY:GOTO 20
AO 50 ST=STICK(0):IF STRIG(0)=0 THEN 1000
RH 51 IF PEEK(53279)=6 AND BALL=0 THEN 20
   00
ZV 55 DX=(ST=7)-(ST=11):DY=(ST=13)-(ST=14
   ):IF  NOT (DX OR DY) THEN 50
AB 60 PMX=PMX+DX:PMY=PMY+DY:IF PMX<0 OR P
   MY<0 OR PMX>9 OR PMY>9 THEN PMX=PMX-DX
   :PMY=PMY-DY:GOTO 50
ZJ 70 PO=PO+DX+DY*20
EI 80 IF DX THEN POKE 53248,128+PMX*8
SN 85 IF DY THEN NPY=NPY+DY*8:Q=USR((1536
   ),NPY,OPY):OPY=NPY
NX 90 FOR I=20 TO 0 STEP -1:SOUND 0,0,2,I
   :NEXT I
KD 95 POKE 77,0:GOTO 50
JK 99 REM Some Sounds
IA 100 FOR I=15 TO 0 STEP -1:FOR J=4 TO 0
    STEP -1:SOUND 0,29-J,10,I:NEXT J:NEXT
    I:RETURN
VG 110 FOR I=50 TO 30 STEP -1:SOUND 0,I,1
   0,12:NEXT I:SOUND 0,0,0,0:RETURN
HO 120 FOR I=19 TO 1 STEP -1:SOUND 0,(200
   -I*10),8,6:SOUND 1,I*10,7,4:FOR J=1 TO
    10:NEXT J:NEXT I
DD 125 SOUND 0,0,0,0:SOUND 1,0,0,0:RETURN
IK 130 FOR I=15 TO 0 STEP -1:SOUND 0,10,8
   ,I:NEXT I:RETURN
YZ 140 FOR I=26 TO 10 STEP -0.5:SOUND 0,I
   *10,14,I/2-5:NEXT I:RETURN
AE 150 FOR I=15 TO 0 STEP -0.5:SOUND 0,10
   2,12,I:SOUND 1,51,12,I:NEXT I:RETURN
UU 160 FOR I=15 TO 0 STEP -0.05:SOUND 0,5
   1,12,I:SOUND 1,102,12,I:SOUND 2,51,12,
   I:SOUND 3,102,12,I:NEXT I:RETURN
NL 170 FOR I=1 TO 30:SOUND 0,42,2,15:NEXT
    I:SOUND 0,0,0,0:RETURN
IV 180 FOR I=1 TO 15:SOUND 0,40,10,10:NEX
   T I:SOUND 0,0,0,0:RETURN
```

```
QZ 185 FOR I=1 TO 15:SOUND 0,90,12,10:NEXT I:SOUND 0,0,0,0:RETURN
LS 190 POSITION 8-(SC>9)-(SC>99),5:? #6;SC:RETURN
FX 1000 T=PEEK(PO)
MA 1010 IF T=121 THEN 1100
CY 1015 REM Deal With Balls
AN 1020 IF T=58 AND BALL>0 THEN T=119:POKE PO,T:GOSUB 130:BALL=BALL-1:GOTO 1090
MD 1030 IF T=119 THEN T=58:POKE PO,T:GOSUB 110:BALL=BALL+1:GOTO 1090
NM 1050 GOSUB 170:GOTO 50
OY 1090 FOR I=1 TO 20:NEXT I:GOTO 50
TQ 1100 GOSUB 120:BP=PMX+1+(PMY*10):REM Fire Into Box
ET 1110 BM=(PMX=0)-(PMX=9)+((PMY=0)-(PMY=9))*10
FG 1120 BC=10:IF BM=BC OR BM=-BC THEN BC=1
SR 1130 IF BOX$(BP+BM,BP+BM)="O" THEN GOSUB 150:POKE PO,74:GOTO 1190
HQ 1140 IF BOX$(BP,BP)<>"Z" THEN 1150
DY 1141 IF BOX$(BP+BM+BC,BP+BM+BC)="O" OR BOX$(BP+BM-BC,BP+BM-BC)="O" THEN GOSUB 140:POKE PO,10:GOTO 1190
VO 1150 IF BOX$(BP+BM+BC,BP+BM+BC)="O" AND BOX$(BP+BM-BC,BP+BM-BC)="O" THEN GOSUB 140:POKE PO,10:GOTO 1190
II 1160 IF BOX$(BP+BM+BC,BP+BM+BC)="O" THEN BM=-BC:GOTO 1120
KA 1170 IF BOX$(BP+BM-BC,BP+BM-BC)="O" THEN BM=BC:GOTO 1120
KJ 1180 IF BOX$(BP+BM,BP+BM)="Z" THEN 1200
OP 1185 BP=BP+BM:GOTO 1120
FT 1190 SC=SC+1:GOSUB 190:GOTO 50
CH 1200 POSITION 10+PMX,1+PMY:? #6;MARK$(MARK,MARK):GOSUB 130:REM Print Markers
NT 1210 BP=BP+BM-1
KA 1220 POSITION BP-(INT(BP/10)*10)+10,1+INT(BP/10):? #6;MARK$(MARK,MARK):GOSUB 130
GL 1230 MARK=MARK+1:SC=SC+1:GOTO 1190
MV 2000 POKE 53248,0:PP=PEEK(88)+PEEK(89)*256+29:REM Check Guess
UI 2010 FOR CY=10 TO 80 STEP 10:FOR CX=2 TO 9:PO=PP+CX+CY*2
OQ 2020 IF PEEK(PO)=58 AND BOX$(CY+CX,CY+CX)="X" THEN 2050
JB 2030 IF PEEK(PO)=119 AND BOX$(CY+CX,CY+CX)="O" THEN POKE PO,247:GOSUB 180:GOTO 2050
WV 2040 IF PEEK(PO)=58 AND BOX$(CY+CX,CY+CX)="O" THEN POKE PO,183:GOSUB 185:SC=SC+5:GOSUB 190:GOTO 2050
MT 2050 NEXT CX:NEXT CY
NM 2060 IF GM<5 THEN POSITION 12,0:? #6;"PRESS":POSITION 12,11:? #6;"BUTTON":GOTO 2070
OZ 2065 POSITION 11,0:? #6;"THE  END"
JQ 2070 IF STRIG(0)=0 THEN 45
RL 2080 GOTO 2070
JJ 7000 REM Title Screen
UI 7010 ? #6;CHR$(125):POKE 709,184:POKE 708,0:POKE 559,46
SI 7020 POSITION 5,1:? #6;"vvvvvvvvvvv":POSITION 5,2:? #6;"vBLACK BOXv":POSITION 5,3:? #6;"vvvvvvvvvvv"
ED 7030 FOR I=0 TO 14 STEP +2:POKE 708,I
LM 7040 FOR J=1 TO 60:NEXT J:POKE 708,0:FOR J=1 TO 20:NEXT J
SP 7050 NEXT I:POKE 708,14
IH 7060 GOSUB 160:FOR I=1 TO 100:NEXT I
BA 7070 RETURN
VA 8000 POKE 559,0:POSITION 0,0:? #6;CHR$(125)
RZ 8005 REM Set Up New Box Array
QW 8010 BOX$(1,10)="ZZZZZZZZZZ":BOX$(91,100)=BOX$(1,10)
KK 8020 FOR I=11 TO 81 STEP +10:BOX$(I,I+9)="ZXXXXXXXXZ":NEXT I
SL 8025 REM Draw New Screen
ZH 8030 POSITION 2,0:? #6;"BLACK":POSITION 3,1:? #6;"BOX"
FQ 8040 POSITION 0,3:? #6;"game....";GM:? #6:? #6;"SCORE...":? #6:? #6;"PATH.iFiQ"
JR 8050 ? #6:? #6;"REBOUND.*":? #6:? #6;"stop....";CHR$(10)
SR 8060 FOR I=1 TO 10 STEP +9:POSITION 10,I:? #6;"VyyyyyyyyV":NEXT I
PA 8070 FOR I=2 TO 9:POSITION 10,I:? #6;"yZZZZZZZZy":NEXT I
BT 8080 GOSUB 190:POKE 53248,136
AM 8090 PMX=1:PMY=0:NPY=PMBASE+536:IF GM=1 OR OPY=NPY THEN 8110
QT 8100 Q=USR((1536),NPY,OPY):OPY=NPY
QT 8110 PO=PEEK(88)+PEEK(89)*256+31:BALL=4:MARK=1
AR 8120 FOR I=1 TO 4:REM Set Up New Puzzle
SY 8130 Z=INT(RND(0)*100):IF BOX$(Z,Z)<>"X" THEN 8130
AH 8140 BOX$(Z,Z)="O":NEXT I
HX 8190 POKE 559,46:GOSUB 100:RETURN
OW 9000 REM Amend Character Set
AF 9010 GRAPHICS 18:POKE 559,0
RR 9020 A=PEEK(106)-4:CUSTOM=A*256:OLDCHAR=PEEK(756)*256
UW 9030 FOR I=0 TO 511:POKE CUSTOM+I,PEEK(OLDCHAR+I):NEXT I
CO 9040 FOR I=1 TO 8:READ CC
RG 9050 FOR J=0 TO 7:READ D:POKE CUSTOM+CC*8+J,D:NEXT J
OL 9060 NEXT I:POKE 756,A
JC 9100 REM Set Up PMG
DO 9110 A=A-4:POKE 54279,A:PMBASE=256*A:POKE 53277,3:POKE 623,1
AD 9120 FOR I=PMBASE+512 TO PMBASE+640:POKE I,0:NEXT I
HF 9130 FOR I=0 TO 5:READ D:POKE PMBASE+537+I,D:NEXT I
EV 9140 NPY=PMBASE+536:OPY=NPY
VX 9190 POKE 704,182:POKE 710,136:POKE 711,250
YF 9200 REM Read PM Move Data
PB 9210 FOR I=0 TO 26:READ D:POKE 1536+I,D:NEXT I
GM 9300 MARK$="FIJqfiJQFIjQfiJG"
DA 9499 RETURN
SU 9500 DATA 38,0,28,28,119,119,8,28,0
NE 9510 DATA 41,0,24,60,126,126,24,60,0
LZ 9520 DATA 42,0,54,127,127,62,28,8,0
RC 9530 DATA 49,0,24,60,126,126,60,24,0
DO 9540 DATA 58,255,129,129,129,129,129,129,255
HR 9550 DATA 54,170,85,170,85,170,85,170,85
FI 9560 DATA 55,0,60,126,126,126,126,60,0
IV 9570 DATA 57,0,0,0,24,24,0,0,0
HD 9580 DATA 24,24,126,126,24,24
VL 9590 DATA 104,104,133,213,104,133,212,104,133,215,104,133,214,160,6,177,214,145,212,169,0,145,214,136,208,245,96
```

# CHARACTER PLOTTING

by Phil Griffin

Many of the games designed for the Atari computers use GRAPHICS 1 and 2 as the basis for the screen display. These are multi-coloured text modes and the normal method of placing characters on the screen is by using the '? #6;' instruction. To obtain the full range of colours available you have to use lower-case and inverse video versions of the character required. Try typing in the following and then press RETURN

```
XC 1 GRAPHICS 2:? #6;"AAaa"
```

The top portion of the screen should contain the letter A in the four default colours - orange, blue, purple and yellow. You will find that all of the letters of the alphabet will give the full range of colours by this method but what about the remaining characters? Well - unfortunately not! The problem is that the operating system does not support lower-case versions of the other characters and consequently you can only print directly in two colours - orange (upper case) and blue (inverse video upper-case). In order to print in the remaining colours, you have to use the CHR$ statement. Try running Program 1.

```
CJ 10 GRAPHICS 2:POKE 752,1
YX 20 FOR I=0 TO 255:POSITION 9,3:? #6;CH
   R$(I):? CHR$(125):? "CHR$ VALUE - ";I;
   "  PRESS ANY KEY":POKE 764,255
PP 30 IF PEEK(764)=255 THEN 30
YR 40 NEXT I:POKE 764,255:GRAPHICS 0:END
```

The normal GRAPHICS 1 and 2 character set is available in the full range of colours although Program 1 only displays the first half of the character set. The second half can be seen by adding the following line to Program 1

```
OO 15 POKE 756,226
```

The order of characters and colours is a bit jumbled but Table 1 should help a little.

Printing using CHR$ can become a little cumbersome but there are other alternatives. The first is by POKEing values directly to the screen memory locations as outlined in my earlier article 'Memory Mapped Screens' in issues 4 and 5 of PAGE 6. This is, unfortunately, a little complicated but can be extremely useful, especially in screens containing mixed graphics modes. There is, however, a much easier solution which is also very versatile.

You may not be aware of it but you can actually PLOT and DRAWTO in GRAPHICS modes 1 and 2. You still need to specify a COLOR before you PLOT and DRAWTO but this does much more than just select a colour as all values from 0 to 255 are valid. Make the following changes to Program 1 and then re-run it.

```
NR 20 FOR I=0 TO 255:COLOR I:PLOT 9,3:? C
   HR$(125):? "COLOR VALUE - ";I;"  PRE
   SS ANY KEY":POKE 764,255
```

You will see that by specifying a COLOR value you can PLOT a specific character in the assigned colour. The figures shown in Table 1 are also the values required when using this method of producing characters. The DRAWTO instruction is just as easy to use. Try typing in Program 2.

```
JG 10 GRAPHICS 2+16:COLOR 3:PLOT 0,0:DRAW
   TO 19,0:DRAWTO 19,11:DRAWTO 0,11:DRAWT
   O 0,0
US 20 COLOR 170:PLOT 1,1:DRAWTO 18,10:PLO
   T 18,1:DRAWTO 1,10
SC 30 GOTO 30
```

| ATASCII CHARACTER DECIMAL CODE | | VALUES REQUIRED TO OBTAIN THE ATASCII CHARACTERS IN THE COLOURS SHOWN | | | |
|---|---|---|---|---|---|
| DEFAULT | POKE 756,226 | YELLOW | ORANGE | PURPLE | BLUE |
| 32 - 63<br>64 - 95 | 0 - 31<br>96 - 128 | 0 - 31<br>96 - 127 | 32 - 63<br>64 - 95 | 128 - 159<br>224 - 255 | 160 - 191<br>192 - 223 |

Table 1

NOTES:
a) The table should be used in conjunction with a list showing the ATASCII character set (normally included as an index in most books).
b) The figures above show the range of values for each character set and colour.
c) Inverse-video versions of the characters are not available in Modes 1 and 2.

Redefined character sets will work in exactly the same way and it should be easy to build up quite complex playfields by this method. Once you have designed your playfield, there is no reason why you should not move a character around the screen in a similar way. Program 3 is a GRAPHICS 1 version of the 'Spider' demonstration program from my earlier article.

```
EE 10 X=10:Y=6:X1=X:Y1=Y:GRAPHICS 1+16
FA 20 COLOR 0:PLOT X1,Y1:COLOR 10:PLOT X,
   Y
CZ 30 X1=X:Y1=Y:S=STICK(0):IF S=15 THEN 3
   0
DK 40 IF S=14 THEN Y=Y-1:IF Y<0 THEN Y=0:
   GOTO 30
UK 50 IF S=13 THEN Y=Y+1:IF Y>23 THEN Y=2
   3:GOTO 30
YP 60 IF S=11 THEN X=X-1:IF X<0 THEN X=0:
   GOTO 30
BN 70 IF S=7 THEN X=X+1:IF X>19 THEN X=19
   :GOTO 30
RY 80 GOTO 20
```

I hope that this outline of 'character plotting' has given you some ideas and set you thinking. Give yourself a break from playing those expensive bought games and write your own, just think of the money you will save! When you have finished it send it in to PAGE 6 for other enthusiasts to share and enjoy seeing your own name in print. Happy computing!





# Freeway Ace!

**Requires 32k**

FREEWAY ACE! is a 3D racing game with scrolling background for one player. It is written in BASIC but contains a substantial amount of machine code. Listing 1 is the BASIC program whilst listing 2, which does not need to be typed in, is the source code for the machine code part.

The player controls the car nearest to him at the bottom of the screen using a joystick in port 1. Only left and right movement is permitted and the object is to avoid fatally crashing into one of the vehicles ahead as you try to overtake. Hitting the kerbs is possible but this will result in the loss of points. Just last as long as possible and obtain the highest score.

The engines roar ... red light ... green light ..... go!

## by Paul Lay

```
EI 1 REM ******************************
SZ 2 REM *                            *
IB 3 REM *       FREEWAY ACE          *
LS 4 REM *           by               *
EY 5 REM *        PAUL LAY            *
ED 6 REM * -------------------------- *
JA 7 REM *  PAGE 6 MAGAZINE - ENGLAND *
TF 8 REM *                            *
EQ 9 REM ******************************
GH 10 DIM PLAY$(1024):GOSUB 560
JR 20 FALSE=0:TRUE=1:HISC=0
CB 30 NOCAR=TRUE:POKE 206,0:POKE 207,0
UU 40 REM *** game play ***
EZ 50 POKE 53761,106:POKE 53760,50
ES 60 POKE 1566,24:POKE 705,2:Z=0:SC=0
KE 70 IF PEEK(53255)<4 THEN 100
FP 80 POKE 53763,78:POKE 53762,120
TL 90 SC=SC-2:GOTO 110
SX 100 POKE 53763,0
WU 110 IF PEEK(53263)<>4 THEN 390
TY 120 POKE 53278,0
BM 130 SC=SC+1:POSITION 23,1:? SC;" "
RN 140 IF  NOT NOCAR THEN 190
OW 150 IF RND(0)>SC/300 THEN 190
JT 160 NOCAR=FALSE
CK 170 X=120+Z:Y=107:D=-1+2*(RND(0)>0.5)
OZ 180 POKE 704,16*INT(RND(0)*15)+8
SV 190 S=STICK(0):IF S=15 THEN 220
KC 200 IF S>8 THEN L=USR(1700):X=X+L:Z=Z+
L
YV 210 IF S<8 THEN L=USR(1638):X=X-L:Z=Z-
L
ZA 220 IF NOCAR THEN 70
LI 230 TRAP 380:POKE 53248,X:POKE 53249,X
LD 240 Y=Y+5:IF Y>226 THEN 340
EI 250 PLAY$(Y,Y+38)=CAR$
YJ 260 PLAY$(256+Y,294+Y)=WHEEL$
MH 270 IF Y>125 THEN 290
JG 280 POKE 53256,0:POKE 53257,0:GOTO 70
HE 290 IF Y>160 THEN 320
OD 300 POKE 53256,1:POKE 53257,1
AI 310 X=X+2*D:GOTO 70
RT 320 POKE 53256,3:POKE 53257,3
BE 330 X=X+4*D:GOTO 70
RX 340 PLAY$(Y-5,Y+24)=PLAY$(600)
FY 350 PLAY$(Y+251,Y+280)=PLAY$(600)
MW 360 POKE 53256,0:POKE 53257,0
XE 370 NOCAR=TRUE:GOTO 70
BW 380 POKE 53248,0:POKE 53249,0:GOTO 240
VO 390 SOUND 1,0,0,0:POKE 1566,23
ES 400 FOR I=0 TO 255
TM 410 SOUND 0,I,6,10
PT 420 POKE 706,I:POKE 707,255-I
BH 430 NEXT I:POKE 706,28:POKE 707,2
VW 440 SOUND 0,0,0,0
OM 450 POKE 53248,0:POKE 53249,0
ZX 460 PLAY$(Y,Y+40)=PLAY$(600)
OQ 470 PLAY$(Y+256,Y+296)=PLAY$(600)
NY 480 POKE 559,0:FOR I=1 TO 16
PS 490 L=USR(1638):NEXT I
PN 500 FOR I=1 TO 8
OI 510 L=USR(1700):NEXT I:POKE 559,62
UP 520 IF SC<HISC THEN 540
YB 530 HISC=SC:POSITION 11,0:? HISC
ZA 540 POKE 53761,206:GOSUB 670
SK 550 POKE 53278,0:POKE 77,0:GOTO 30
QI 560 REM *** introduction ***
VN 570 GOSUB 830
```

Listing 2

```
1000  *=$0600
1010  PHA
1020  TXA
1030  PHA
1040  LDX CURRENT
1050  INC CURRENT
1060  LDA CURB,X
1070  STA WSYNC
1080  STA $D018
1090  LDA LINE,X
1100  STA $D017
1110  LDA #$B6
1120  STA $D01A
1130  CPX #24
1140  BNE EXIT
1150  LDX #$00
1160  STX CURRENT
1170 EXIT
1180  PLA
1190  TAX
1200  PLA
1210  RTI
1220 ;
1230 CURB *=*+30
1240 LINE *=*+30
1250 ;
1260 CURRENT = $CB
1270 WSYNC   = $D40A
1280 ;
1290 MOVERIGHT
1300 ;
1310  PLA
1320  LDA #$00
1330  STA $D4
1340  STA $D5
1350  LDA RIGHTS
1360  CMP #$08
1370  BEQ EXIT1
1371  LDA #$08
1372  STA $D4
1380  INC RIGHTS
1390  DEC LEFTS
1400  LDA 560
1410  STA $CC
1420  LDA 561
1430  STA $CD
1440  LDY #15
1450 LOOP LDA ($CC),Y
1460  CLC
1470  ADC #$01
1480  STA ($CC),Y
1490  BCC SKIP
1500  INY
1510  LDA ($CC),Y
1520  CLC
1530  ADC #$01
1540  STA ($CC),Y
1550  DEY
1560 SKIP INY
1570  INY
1580  INY
1590  CPY #96
1600  BMI LOOP
1610 EXIT1 RTS
1620 ;
1630 MOVELEFT
1640 ;
1650  PLA
1651  LDA #$00
1652  STA $D4
1653  STA $D5
1660  LDA LEFTS
1670  CMP #$08
1680  BEQ EXIT2
1681  LDA #$08
1682  STA $D4
1690  INC LEFTS
1700  DEC RIGHTS
1710  LDA 560
1720  STA $CC
1730  LDA 561
1740  STA $CD
1750  LDY #15
1760 LOOP2 LDA ($CC),Y
1770  SEC
1780  SBC #$01
1790  STA ($CC),Y
1800  BCS SKIP2
1810  INY
1820  LDA ($CC),Y
1830  SEC
1840  SBC #$01
1850  STA ($CC),Y
1860  DEY
1870 SKIP2 INY
1880  INY
1890  INY
1900  CPY #96
1910  BMI LOOP2
1920 EXIT2 RTS
1930 ;
1940 RIGHTS = $CE
1950 LEFTS  = $CF
```

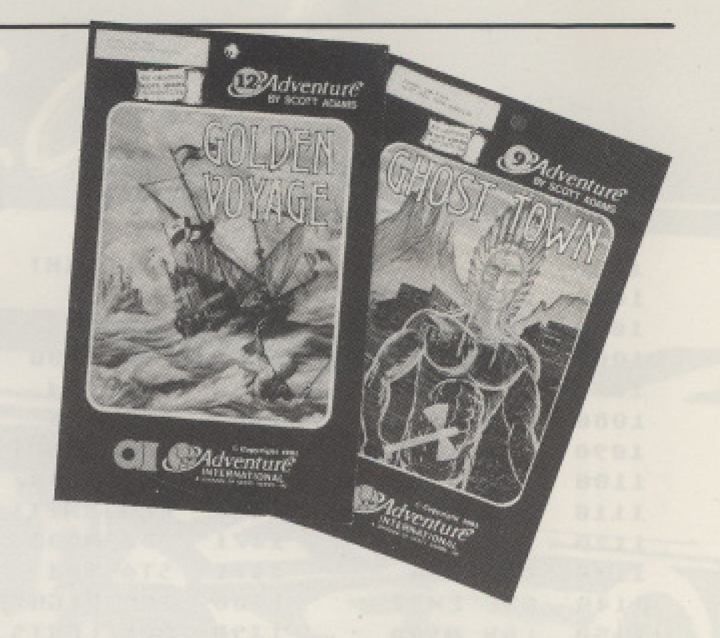
```
ET 580 POSITION 0,0:? "HIGH SCORE 0"
IU 590 POKE 752,1:POKE 53761,206
KM 600 FOR X=0 TO 12:POSITION X,3
PB 610 ? "  FREEWAY ACE! "
JB 620 POKE 53760,X:NEXT X
CM 630 FOR X=0 TO 9:POSITION X,5
FK 640 ? " (c)1985 by Paul Lay"
JH 650 POKE 53760,X:NEXT X
RY 660 POKE 53760,0
KA 670 FOR X=0 TO 14:POSITION X,1
KC 680 FOR X=0 TO 14:POSITION X,1
TP 690 ? " HIT TRIGGER        "
IY 700 POKE 53760,X:NEXT X
JY 710 POKE 53761,170
QT 720 FOR I=1 TO 40:NEXT I
FR 730 POSITION 15,1:? "hit trigger"
AH 740 POKE 53760,50
QZ 750 FOR I=1 TO 40:NEXT I
ZM 760 IF  NOT STRIG(0) THEN 800
JF 770 POSITION 15,1:? "HIT TRIGGER"
JG 780 POKE 53760,250
UX 790 IF STRIG(0) THEN 720
JS 800 POKE 53761,0:POSITION 10,1
LY 810 ? "       SCORE 0"
ZI 820 RETURN
LS 830 REM ****** draw track ******
OK 840 GRAPHICS 23:POKE 559,0
DS 850 POKE 708,6:POKE 709,14
LR 860 POKE 710,118:POKE 712,118
HW 870 COLOR 1:FOR I=48 TO 111
IC 880 PLOT 80,73:DRAWTO I,95:NEXT I
MS 890 COLOR 3:FOR I=40 TO 47
CA 900 PLOT 79,73:DRAWTO I,95
SC 910 PLOT 81,73:DRAWTO 159-I,95
HP 920 NEXT I:COLOR 2
IO 930 PLOT 80,74:DRAWTO 80,95
JO 940 PLOT 80,74:DRAWTO 81,95
ZE 950 PLOT 0,72:DRAWTO 159,72
ID 960 REM *** set up display list ***
GH 970 DL=PEEK(560)+256*PEEK(561)
FT 980 SM=PEEK(DL+4)+256*PEEK(DL+5)
PN 990 POKE DL+2,112:POKE DL+3,66
HB 1000 FOR I=6 TO 13
YD 1010 POKE DL+I,2:NEXT I
VW 1020 FOR I=0 TO 2
JE 1030 POKE DL+3*I+14,66
FT 1040 HI=INT((SM+1540+120*I)/256)
EE 1050 LO=SM+1540+120*I-256*HI
XE 1060 POKE DL+3*I+15,LO
CM 1070 POKE DL+3*I+16,HI:NEXT I
FW 1080 FOR I=0 TO 23
TT 1090 POKE DL+3*I+23,202
EU 1100 HI=INT((SM+2890+40*I)/256)
GO 1110 LO=SM+2890+40*I-256*HI
WT 1120 POKE DL+3*I+24,LO
CB 1130 POKE DL+3*I+25,HI:NEXT I
FX 1140 POKE DL+95,65
NL 1150 POKE DL+96,PEEK(560)
PB 1160 POKE DL+97,PEEK(561)
XD 1170 HI=INT((SM+1500)/256)
FF 1180 LO=SM+1500-256*HI
ZB 1190 POKE 87,0:POKE 88,LO:POKE 89,HI
GY 1200 POKE 82,0:POKE 83,39
EL 1210 COLOR 32:PLOT 0,0
MW 1220 REM *** set up machine code ***
PU 1230 DATA 72,138,72,174,203,0,238
KS 1240 DATA 203,0,189,42,6,141,10
WS 1250 DATA 212,141,24,208,189,72,6
UP 1260 DATA 141,23,208,169,182,141,26
VO 1270 DATA 208,224,23,208,5,162,0
PA 1280 DATA 142,203,0,104,170,104,64
RP 1290 FOR I=1536 TO 1577
MV 1300 READ J:POKE I,J:NEXT I
DC 1310 DATA 104,169,0,133,212,133,213
YC 1320 DATA 173,206,0,201,8,240,47
KS 1330 DATA 169,8,133,212,238,206,0
ZN 1340 DATA 206,207,0,173,48,2,133
WL 1350 DATA 204,173,49,2,133,205,160
IE 1360 DATA 15,177,204,24,105,1,145
YG 1370 DATA 204,144,9,200,177,204,24
VH 1380 DATA 105,1,145,204,136,200,200
LC 1390 DATA 200,192,96,48,231,96,104
JC 1400 DATA 169,0,133,212,133,213,173
IA 1410 DATA 207,0,201,8,240,47,169
II 1420 DATA 8,133,212,238,207,0,206
WV 1430 DATA 206,0,173,48,2,133,204
```

*continued on page 48*



13,040 17540 29750 33560

# 8. Behind the Scenes




When I play an Adventure, I judge it according to the time frame in which it was originally written. For example, when I wrote about Scott Adams' Adventureland, I described it in superlative terms because that's what it deserved when you consider that it was written in 1978.

However, times change and the old Scott Adams series seem really crude compared to the likes of Infocom. If anyone brought out a Scott Adams quality Adventure today, it would surely be a flop...unless of course your name happens to be Scott Adams!

The only reason I mention this is that I recently played The Sorcerer of Claymorgue Castle and boy, was I ever disappointed! I couldn't understand why all the reviewers had raved over it. Sure it had nice graphics, but the Adventure itself was downright lousy. It never told you the full story, the spelling was atrocious, the puzzles were illogical and the solutions were unfair. And from what I've read, The Hulk is similarly afflicted. Why?

I think there are two simple reasons. Firstly, Scott Adams boasts that he never plays other people's Adventures in order to avoid any subliminal influence. What rot! An Adventure author should keep track of all new games in order that his own creations will be state-of-the-art. Apart from which, Adventures of Infocom's quality are the greatest inspiration that anyone could hope for. Secondly, he's still using the same antiquated Adventure editor and interpreter that he's been using since Adventureland. Come on Scott. I'm a great fan of yours, but this is 1985, not 1978!

Now that I've got that off my chest, let's turn to this month's topic...how Scott Adams writes an Adventure! Despite what I've said above, I thought I'd cover this topic for two reasons. Firstly, even though it's of general interest, it is especially useful to all those budding Adventure writers who are currently dabbling with Adventure Master, Adventure Writer or Adventure Construction Set. Secondly, an appreciation of the inner workings of an Adventure makes the game make a little more sense and hence, easier to play.

### How Scott Adams Writes Adventures

Scott Adams says that he begins an Adventure by picking a subject such as Dracula or the Old West. He decides whether to make it treasure oriented or mission oriented, then builds the landscape. This will include a skeleton of the problems and obstacles to overcome. As he dots the landscape with objects, further problems present themselves and are incorporated into the structure. At this point, he uses a program called an Adventure editor to build the Adventure database. When the database is complete, it is merged with another program called an Adventure interpreter.

By this time, the Adventure is probably 50 percent of its final size. It is play tested by Scott and others who provide him with numerous ideas on how to fill the gaps in the structure. Using these ideas, the database is modified and re-tested until the Adventure is finally complete. This whole process takes anything from one week (for Mystery Fun House) to one year (for Adventureland), but one month is the average. The final product that you buy consists of the interpreter and the database.

### Structure of the Database

The database consists of five tables - vocabulary, objects, rooms, messages and commands. The vocabulary table stores the first three letters (or four in the later Adventures) of every legal word that the player can use in the Adventure. This table is divided into verbs and nouns stored in ASCII format. If any word is preceded by an asterisk, it means that it is a synonym for the previous word. When the interpreter runs, it scans the verbs to find a match for the player's first word. If a match is found, the player's word is converted to a number representing the offset into the verb table and the process is repeated for the noun. If no match is found for either the verb or the noun, then an error message is printed.

The objects table contains descriptions of each of the objects as well as the room number where the object resides. The description is in ASCII, but is optionally followed by the take/drop control. The latter is not relevant to our brief discussion, but may be identified by a 3 or 4 character abbreviation of the object description enclosed by slashes. If the object's room number is zero, then it is in limbo. If the object's room number is minus one, then the player is carrying it.

Each location in an Adventure is known as a room and is given a unique number greater than zero. (Remember that room zero is used for objects not currently in play. The player can never get to this room.) The room table contains descriptions and directions for each of the rooms. The descriptions are again in ASCII. If a description is preceded by an asterisk, the description is assumed to be complete.

**by Garry Francis of Sydney, Australia**

For example, '*I'm under a bed' will be printed out as 'I'm under a bed'. If the description is not preceded by an asterisk, then the description will automatically be preceded by 'I'm in a' when printed. For example, 'forest' will be printed as 'I'm in a forest'.

There are six possible directions from every room (i.e. north, south, east, west, up and down), but not all of these will necessarily be valid for a particular room. There is one entry in the table corresponding to each of the possible exits from each room. If an entry is zero, it means there is no exit in that direction. If an entry is non-zero, it indicates the room number that the player will end up in if he goes in that direction.

The message table contains all the Adventure's messages and these are again in ASCII. Each message is given a number in the range 1 to 51 or 102 to 149.

The command table is the crux of the Adventure. This contains one entry for each of the auto commands (explained in a moment) and each of the valid commands that a player may use. Each entry consists of a verb number, a noun number, a logic section and an action section. Remember from above that the player's input is converted into a verb number and a noun number. When this is complete, the player phase begins, whereby the command table is searched for a match on the verb/noun combination. If a match is found, the logic section is checked.

The logic section consists of 0 to 5 conditions. If these are all satisfied, the actions in the action section are executed. If they are not satisfied, then the search continues for another match on the verb/noun combination.

Once the search is exhausted or all necessary actions have been carried out, the auto phase is executed. This is the background processing. It is carried out the same way as the player phase, except that the verb is zero to denote an auto command and the noun is a number from 1 to 100. The noun number represents the percentage chance of an action being carried out if the logic section of the auto command is satisfied. For example, if the logic section is satisfied and the noun number is 20, then there is a 20% chance of the action being carried out. If the logic section is satisfied and the noun number is 100, then there is a 100% chance of the action being carried out.

The auto commands are quite an essential feature of the Scott Adams adventures. They allow all the seemingly random events to occur - like the tide going in and out in Pirate Adventure or the bell ringing at various intervals in Ghost Town or the bear deciding to eat you in Savage Island Part 1. Yet at the same time, flaws in their logic allow for some extremely frustrating moments. For example, it is feasible (though unlikely) that you could play Ghost Town for a thousand turns without the piano playing ghost ever making an appearance.

The one Adventure where bad logic in the auto commands is particularly evident is Savage Island Part 1. Even if you know the game inside out, there's a good chance that you'll be killed through no fault of your own. When I first played the game, I was killed by the bear immediately upon entering the volcano. This happened three times in a row with absoulutely no opportunity to save myself. Similarly, I knew I needed a palm log, but I could wait anywhere from 1 to 50 moves for it to appear. And I had recurring nightmares about the raft that randomly took me everywhere except where I wanted to go until the raft would eventually fall apart. Very annoying.

## Anything Else?

In addition to the five tables, the interpreter sets up a number of control flags. There are 15 special flags which may be set or cleared by the various actions. Initially, they are all clear. There is also a 'dark flag' which indicates whether or not it is too dark to see. And finally, there is a counter which tells how many turns are left before the light source goes out. Incidentally, the light source is always object number 9.

## Hints

I didn't have enough time to prepare any hints this month, so I'll try to make up for it in the next issue - but no promises. I also have to write an Adventure column and a Question and Answer column for my own users' group, as well as run the Software Exchange. Other recent events included participation in the Australian Personal Computer Show and lecturing teachers in a country area on how to use the Atari. I barely have time to scratch myself anymore!

### *HAVING PROBLEMS?*

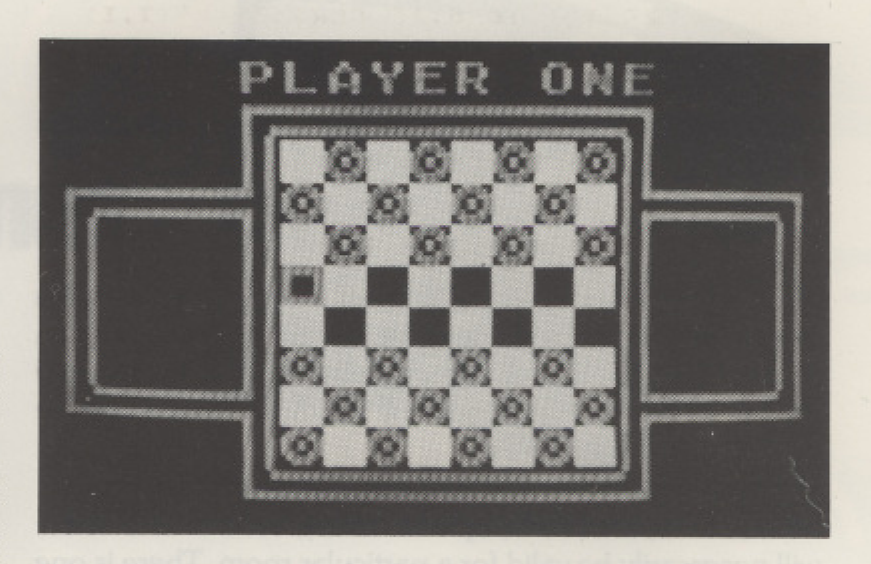
**Unfortunately there were one or two problems with the listings in issue 15. A few TYPO codes did not match in lines with REM statememts due the fact that I spotted spelling mistakes after having done the coding and corrected them forgetting that the code would be wrong!**

**KANGA will not run in 16k.**

**THE WANDERER. Line 1310 should end with RAMTOP-4. The TYPO code will not match and you must abbreviate commands and leave out all spaces (or split the line to two lines).**

**AUTOCAR. To use TYPO II you must type the listing in two parts, LIST each to disk and then ENTER each part to obtain the final listing.**

# DRAUGHTS




by Graeme Walters

This game for two players follows all the normal rules of Draughts except that there are no 'huffs', that is, you are not obliged to jump when you are able to do so.

Movement of the draughts is by positioning the cursor over the piece you wish to move and pressing the RETURN key. When a piece has been selected the cursor is moved in the direction that you wish the piece to be played. If your opponent's draught is able to be jumped, your piece will move past your opponent's and his piece will be removed from the board. When a move which involves jumping is completed press RETURN to pass play to your opponent. Any illegal moves will be indicated by an appropriate sound and flashing border.

The cursor is controlled by the four arrow keys on the keyboard although the diagonal movement may take some getting used to.

```
WN 0 REM ******************************
UM 1 REM *         DRAUGHTS           *
RS 2 REM *            by              *
GX 3 REM *         G.WALTERS          *
SQ 4 REM * -------------------------- *
KB 5 REM * PAGE 6 MAGAZINE - ENGLAND  *
WT 6 REM ******************************
VN 7 DIM M$(6):M$="#*&'(+":DIM M1$(19),M2
   $(19),M3$(50)
QE 8 GOSUB 5000:GRAPHICS 18
GN 9 SETCOLOR 4,0,0:? #6;"K":POKE 16,64
UN 10 ? #6;"K":FOR M=0 TO 3:SETCOLOR M,0,
   0:NEXT M
GY 15 POSITION 5,1:? #6;"$++++++++%":FOR
   I=2 TO 9:POSITION 5,I:? #6;"&        &
   ":NEXT I
EU 17 POSITION 5,3:? #6;"#":POSITION 5,8:
   ? #6;"#":POSITION 14,8:? #6;"*":POSITI
   ON 14,3:? #6;"*"
KR 20 POSITION 5,10:? #6;"'++++++++("
SQ 30 FOR I=2 TO 9 STEP 2:POSITION 6,I:?
   #6;") ) ) )":NEXT I:FOR I=3 TO 9 STEP
   2:POSITION 7,I:? #6;") ) ) )":NEXT I
OW 40 FOR I=7 TO 14 STEP 2:FOR I1=2 TO 4
   STEP 2:POSITION I,I1:? #6;"x":POSITION
    I-1,3:? #6;"x":NEXT I1:NEXT I
YW 50 FOR I=6 TO 13 STEP 2:FOR I1=7 TO 9
   STEP 2:POSITION I,I1:? #6;"☒":POSITION
    I+1,8:? #6;"☒":NEXT I1:NEXT I
IL 60 PL=2:CX=6:CY=5:Z1=32
EQ 65 POSITION CX,CY:? #6;"J"
QQ 70 POSITION 5,0:? #6;"player one"
TG 80 POSITION 1,3:? #6;"$+++":POSITION 1
   ,8:? #6;"'+++":POSITION 15,3:? #6;"+++
   %":POSITION 15,8:? #6;"+++("
QG 85 FOR I=4 TO 7:POSITION 1,I:? #6;"&":
   POSITION 18,I:? #6;"&":NEXT I
NH 90 SETCOLOR 0,7,6:SETCOLOR 2,0,12:SETC
   OLOR 1,12,8:SETCOLOR 3,3,6:POKE 756,Q
TQ 100 REM  CURSOR MOVEMENT
EE 105 PL=3-PL
WJ 110 POKE 764,255
SP 115 P=PEEK(764):IF P=255 THEN 115
KJ 117 IF P=12 THEN 200
ML 120 IF (P=6 OR P=7 OR P=14 OR P=15)=0
   THEN 115
QJ 125 X=(P=7 OR P=15)-(P=6 OR P=14):Y=(P
   =6 OR P=7)-(P=14 OR P=15)
UM 130 LOCATE CX+X,CY+Y,Z:FOR I=1 TO 6:IF
    CHR$(Z)=M$(I,I) THEN GOSUB 1010:GOTO
   110
GM 135 NEXT I
AY 136 GOSUB 140:GOTO 110
CN 140 POSITION CX,CY:? #6;CHR$(Z1):GOSUB
    1020:CX=CX+X:CY=CY+Y:POSITION CX,CY
LI 142 Z1=Z
VS 145 IF Z=32 OR Z=160 THEN ? #6;"J":GOT
   O 170
YT 150 IF Z=120 THEN ? #6;"j":GOTO 170
NE 155 IF Z=118 THEN ? #6;"u":GOTO 170
WV 160 IF Z=248 THEN ? #6;"▛":GOTO 170
HM 165 ? #6;"◘"
ZL 170 RETURN
ZV 200 REM  DRAUGHT MOVEMENT
KZ 201 IF Z1=32 OR Z1=160 THEN GOSUB 1020
   :GOTO 110
KU 205 IF Z1=120 OR Z1=118 THEN IF PL=1 T
   HEN 217
SP 210 IF Z1=248 OR Z1=246 THEN IF PL=2 T
   HEN 217
UV 215 GOSUB 1020:GOTO 110
AE 217 SOUND 0,96,10,8:W=20:GOSUB 1100:GO
   SUB 1110
WM 220 POKE 764,255
VD 225 P=PEEK(764):IF P=255 THEN 225
OX 227 IF P=12 THEN IF J>0 THEN GOTO 400
PZ 230 IF (P=6 OR P=7 OR P=14 OR P=15)=0
   THEN 225
QM 235 X=(P=7 OR P=15)-(P=6 OR P=14):Y=(P
   =6 OR P=7)-(P=14 OR P=15)
RC 240 IF Z1=120 AND Y=-1 AND J>0 THEN GO
   SUB 1030:GOTO 220
MH 245 IF Z1=248 AND Y=1 AND J>0 THEN GOS
   UB 1030:GOTO 220
KT 246 IF Z1=120 AND Y=-1 THEN GOSUB 1030
   :GOTO 110
XF 247 IF Z1=248 AND Y=1 THEN GOSUB 1030:
   GOTO 110
ZL 250 LOCATE CX+X,CY+Y,Z
IJ 255 IF Z=Z1 OR Z=Z1+2 OR Z=Z1-2 THEN G
   OSUB 1030:GOTO 110
DW 257 IF J>0 THEN IF Z=32 OR Z=160 THEN
   GOSUB 1030:GOTO 220
```

```
GI 260 FOR I=1 TO 6:IF CHR$(Z)=M$(I,I) TH
   EN GOSUB 1010:GOTO 220
GK 262 NEXT I
DQ 265 POSITION CX,CY:? #6;" ":CX=CX+X:CY
   =CY+Y
OT 270 IF J=0 THEN IF Z=32 OR Z=160 THEN
   POSITION CX,CY:? #6;CHR$(Z1):GOTO 400
SK 275 LOCATE CX+X,CY+Y,Z2
WY 280 IF Z2<>32 AND Z2<>160 THEN CX=CX-X
   :CY=CY-Y:POSITION CX,CY:? #6;CHR$(Z1):
   GOSUB 1030
BY 282 IF Z2<>32 AND Z2<>160 AND J=0 THEN
    110
CF 283 IF Z2<>32 AND Z2<>160 THEN 220
MN 285 POSITION CX,CY:? #6;" ":CX=CX+X:CY
   =CY+Y:POSITION CX,CY:? #6;CHR$(Z1)
SV 300 REM  MULTIPLE JUMP 
IE 305 J=1:IF PL=1 THEN RC=RC+1:GOSUB 120
   0
GE 310 IF PL=2 THEN GC=GC+1:GOSUB 1250
MJ 315 GOTO 200
KR 400 REM  KING? 
ZA 401 IF PL=1 AND CY=9 THEN Z1=118:Z=Z1:
   GOTO 410
WU 405 IF PL=2 AND CY=2 THEN Z1=246:Z=Z1:
   GOTO 410
YD 407 LOCATE CX,CY,Z
PR 410 J=0:GOSUB 1000:POSITION CX,CY:GOSU
   B 145:GOTO 100
UR 1000 REM  END OF TURN 
AX 1002 SOUND 0,121,10,8:SOUND 1,96,10,8:
   SOUND 2,81,10,8:SOUND 3,60,10,8
XY 1003 IF PL=1 THEN POSITION 5,0:? #6;"
          ":POSITION 5,11:? #6;"player
   two":GOTO 1005
MB 1004 POSITION 5,11:? #6;"          ":P
   OSITION 5,0:? #6;"player one"
QM 1005 W=150:GOSUB 1100:GOSUB 1110:RETUR
   N
KG 1010 SOUND 0,36,2,8:FOR CH=1 TO 3:SETC
   OLOR 0,1,12:W=10:GOSUB 1100:SETCOLOR 0
   ,7,6:W=20:GOSUB 1100
HB 1012 NEXT CH:GOSUB 1110:RETURN
FM 1020 SOUND 0,121,10,8:W=20:GOSUB 1100:
   GOSUB 1110:RETURN
FN 1030 SOUND 0,243,10,8:SOUND 1,193,10,8
   :SOUND 2,162,10,8:SOUND 3,121,10,8:W=1
   50:GOSUB 1100:GOSUB 1110:RETURN
NQ 1100 FOR WW=1 TO W:NEXT WW:RETURN
AH 1110 FOR W=0 TO 3:SOUND W,0,0,0:NEXT W
   :RETURN
HZ 1200 IF RC<5 THEN RX=15
LJ 1205 IF RC>4 AND RC<9 THEN RX=16
NB 1207 IF RC>8 THEN RX=17
CQ 1210 RY=RC/4
GN 1215 IF RY>1 THEN RY=RY-1:GOTO 1215
AF 1220 IF RY=1 THEN RY=7
CF 1225 IF RY=0.75 THEN RY=6
VW 1230 IF RY=0.5 THEN RY=5
XS 1235 IF RY=0.25 THEN RY=4
MC 1240 POSITION RX,RY:? #6;"⊠":IF RC=12
   THEN 2050
BJ 1245 RETURN
EJ 1250 IF GC<5 THEN GX=4
CP 1255 IF GC>4 AND GC<9 THEN GX=3
FZ 1257 IF GC>8 THEN GX=2
WW 1260 GY=GC/4
SM 1265 IF GY>1 THEN GY=GY-1:GOTO 1265
OY 1270 IF GY=1 THEN GY=7
PR 1275 IF GY=0.75 THEN GY=6
JT 1280 IF GY=0.5 THEN GY=5
LE 1285 IF GY=0.25 THEN GY=4
YZ 1290 POSITION GX,GY:? #6;"x":IF GC=12
   THEN 2000
BY 1295 RETURN
RU 2000 POKE 756,Q1:? #6;"K":M1$="   play
   er two wins ":M2$="bad luck player one
   "
RU 2005 GOTO 2080
PL 2050 POKE 756,Q1:? #6;"K":M1$="   play
   er one wins ":M2$="bad luck player two
   "
LK 2080 FOR M=1 TO 19
UP 2085 POSITION 20-M,5:? #6;M2$(1,M)
BX 2090 POSITION 0,2:? #6;M1$(20-M)
NK 2095 FOR W=1 TO 25:NEXT W:NEXT M
OD 2100 M3$="PRESS START TO PLAY AGAIN
                  "
AH 2105 FOR M=1 TO 45:IF PEEK(53279)=6 TH
   EN POKE 756,Q:GOTO 9
VU 2110 IF 19-M<1 THEN F=F+1
CA 2115 POSITION 19-M+F,9:? #6;M3$(1+F,M)
ZV 2120 FOR W=0 TO 10:NEXT W:NEXT M:F=0:G
   OTO 2105
OQ 5000 GRAPHICS 18:P=PEEK(560)+256*PEEK(
   561)
DH 5005 SETCOLOR 4,2,0:SETCOLOR 0,1,8:SET
   COLOR 1,7,10:SETCOLOR 2,12,10:SETCOLOR
    3,5,12
NN 5010 POKE P+6,6:POSITION 8,1:? #6;"PLA
   Y"
SQ 5015 POSITION 6,2:? #6;"draughts"
XU 5020 POKE P+10,6:POSITION 9,5:? #6;"BY
   "
WF 5025 POKE P+11,6:POSITION 3,6:? #6;"gr
   aeme walters"
UT 5030 POKE P+14,6:POSITION 3,9:? #6;"PR
   OGRAMMED FOR"
NP 5035 POSITION 7,10:? #6;"PAGE 6"
CW 5040 GOSUB 10000:FOR I=P+6 TO P+14:POK
   E I,7:NEXT I:RETURN
FI 9999 GRAPHICS 2
PY 10000 POKE 106,PEEK(106)-8:Q=PEEK(106)
   :N=Q*256
YN 10005 FOR M=0 TO 1023:POKE N+M,PEEK(57
   344+M):NEXT M
XV 10010 FOR M=0 TO 71:READ D:POKE N+M+24
   ,D:NEXT M
TS 10011 FOR M=0 TO 15:READ D:POKE N+M+42
   4,D:NEXT M
VZ 10012 FOR M=0 TO 7:READ D:POKE N+M+336
   ,D:NEXT M
BX 10013 FOR M=0 TO 7:READ D:POKE N+M+448
   ,D:NEXT M
ZH 10015 Q1=PEEK(756):RETURN
SS 10100 DATA 102,230,230,6,6,230,230,102
KJ 10110 DATA 0,127,127,96,96,99,99,102
UI 10120 DATA 0,254,254,6,6,198,198,102
TA 10130 DATA 102,102,102,102,102,102,102
   ,102
BN 10140 DATA 102,99,99,96,96,127,127,0
PA 10150 DATA 102,198,198,6,6,254,254,0
QW 10160 DATA 255,255,255,255,255,255,255
   ,255
YN 10170 DATA 102,103,103,96,96,103,103,1
   02
TE 10180 DATA 0,255,255,0,0,255,255,0
XY 10190 DATA 255,255,195,219,219,195,255
   ,255
XD 10200 DATA 0,219,219,255,255,153,255,0
CV 10210 DATA 255,255,195,195,195,195,255
   ,255
MF 10220 DATA 60,126,231,219,219,231,126,
   60
```

# The ATARI BOOK of BOOKS

**compiled by**

**Kevin Fleming**

It is very easy to criticise the written work of others and I acknowledge that it is much more difficult to originate. I must therefore state that the critiques given here are a *personal* assessment of my collection and are highly subjective. Other people could easily come to a completely opposite view. I hope that any author reading this review does not take it too much to heart if I have given him/her a bit of a 'slagging'. Because I have 'reviewed' 63 books in this article, the comments have, necessarily, been extremely superficial and, at times, cryptic. However, I hope it encourages you to buy some of these excellent books rather than 'fritter' your money away on non-Atari specific periodicals.

### EXPENSIVE?

The problem with non-Atari *magazines* is that they are just not cost-effective. For around 95 pence you usually get 3 to 4 pages of relevant material if you're lucky and only one page if you're not!

At an estimated average of 35 pence per page, this is equivalent to an Atari-specific computing book, normally about 150 pages, being priced at over £50, so don't faint clean away if you find that, thanks to the dollar exchange rate, some of the paperbacks I'm about to recommend, come into your local bookshop at around the 20 pound sterling mark!

I have purposely left the American books at their dollar prices so that you won't be upset by the final sterling price which tends to be increasing even as you read this..... and given the time it takes for your bookseller to order books from the U.S., don't be too surprised if you're being asked to part with 20-25 pounds sterling! Books with a sterling price should be easily available in the U.K.

### ESSENTIAL

**How to maintain and service your small computer** (N/G) by Stephenson & Cahill published by Howard W. Sams & Co., Inc. $17.95. You *know* you're going to need this and it may be sooner than you think. Get it now, it could save you a fortune in transportation costs, never mind service charges. Very accessible, even to non-electronic types like me.

**ABCs of Atari Computers** (A/G) by David E. Mentley published by Datamost $14.95. Super snippets. Plenty to dip into. As a bonus, there is a type-in listing for AMODEM Ver. 4.3. By an enthusiast for enthusiasts

**The Creative Atari** (A/G) by Small, Small & Blank published by Creative Computing Press $15.95. Yes, it is a good as they claim it is. Marvellous insights.

**The Analog Compendium** (A/G) by the editors of Analog $14.95. The best of their first ten issues. Some great programs. You won't want to be without Black Rabbit 2.0.

**Your Atari Computer** (A/G) by Poole, McNiff & Cook published by Osborne/McGraw - Hill £17.50. As another reviewer once said, 'the one they should have boxed with the Atari'. That says it all!

**The Master Memory Map for the Atari** (A/G) by Patchett & Sherer published by Reston $15.95. They go on about 'Mapping the Atari'(see below). Forget it, this is the one you want. Much more user-friendly.

### CLASSIFICATION

I propose to classify the books into the following categories

**ESSENTIAL** - go into debt for these!
**DESIRABLE** - good if you can afford them.
**ACCEPTABLE** - alright if you like the look of them.
**DISPENSABLE** - hopefully, returnable!
**DISPOSABLE** - is there a shredder in the house?!

I must emphasise again that the classifications are my own *personal* opinion.

I also intend to distinguish between books by using combinations of the following codes

A - Atari specific
N - Non-Atari specific
G - For the general Atari user
X - For experienced Atari users

### DESIRABLE

**The Best of Antic - Volume one** (A/G) by Capparell & DeWitt published by Antic $12.95. Some very good programs, some of which have filtered through to PAGE 6 Library disks.

**The Atari User's Encyclopedia** (A/G) by Phillips & White published by The Book Company $19.95. Another good selection of snippets.

**Mapping the Atari** (A/X) by Ian Chadwick published by Compute! Books £10.95. Good stuff but aimed more at the experienced user.

**Technical Reference Notes** (A/X) published by Atari $27.00. Comprises: Operating System User's Manual - Operating System Source Listing - Hardware Manual. A must for the 'serious' user.

**Programmer's Reference Guide for the Atari 400/800 Computers** (A/X) by David Heiserman published by Howard W. Sams & Co., Inc. $21.95. A wealth of tabulated information. Some annoying errata e.g. Appendix D - Atari Keyboard Codes (in no way do these codes correspond to my 800 which is in complete accord with page 53 of the above Technical Reference Notes).

**Atari Roots** (A/X) by Mark Andrews published by Datamost $14.95. *The* best guide available on Atari assembly language.

**Compute!s Third Book of Atari** (A/G) published by Compute! Publications Inc. £10.95. In my view, the best of this series so far. A word of warning, before you dive in and spend three hours typing the now-famous 'Wedge' by Charles Brannon, be advised that an updated version by Michael Hepner was published in the May 1983 issue of Compute! It includes a SPRINT command that sends an entire screen to the printer.

**Easy Programming for the Atari Micros** (A/G) by Eric Deeson published by Shiva Publishing Ltd. £6.95. At last, a British book and the most cost-effective of the lot! Very friendly and supported by Jon Dean of Atari, need I say more!

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## ACCEPTABLE

**De Re Atari** (A/X) by the Software Development Support Group of Atari published by A.P.X. $19.95. What do I mean acceptable? Don't I realise that Chris Crawford, Jim Dunion and similar luminaries of the Atari firmament were members of that Group? Yes, and I refuse to be over-awed! This book may be very highly thought of by Lone Raiders and Mutant Camels, but, in my opinion, it is a book which in no way lives up to its advance publicity! It meanders all over the place, very rarely getting to the point! For the orthodox amongst you, I would direct your attention to Appendix B - Human Engineering and rest my case!

**Atari Games & Recreations** (A/G) by Kohl, Kahn, Lindsay & Cleland published by Reston $14.95. An often under-valued book with some excellent appendices, in particular Appendix I - Errors and Error Messages.

**Programming the 6502** (N/X) by Rodnay Zaks published by Sybex $(?). A very clear exposition of a fairly dry topic.

**Machine Code for Beginners** (N/G) by Watts & Wharton published by Usborne £2.25. Forget the fact that it's in children's format, it gets the point across, and at this price!

**Mastering the Atari** (A/G) by Darryl Severn published by Interface Publications £5.95. More of an intermediate level book. Some good explanations of the Input/Output procedures.

**Best of PCW Software for the Atari XL** (A/G) edited by Jane Bird published by Century Communications Ltd. £5.95. Some delightful programs e.g. Handel's Arrival of the Queen of Sheba and also some snappy tips & tricks.

**I Speak Basic to my Atari** (A/G) by Aubrey Jones Jr. published by Hayden Book Company Inc. $(?). If you're just starting out and you haven't a clue about Basic, this is the one for you!

**Some Common Basic Programs - Atari Edition** (A/G) by - Poole, Borchers & Cook published by Osborne/McGraw-Hill $14.99. Various business, mathematical & statistical program listings. Get it if you need them.

**Compute!'s Second Book of Atari** (A/G) by the editors of Compute! magazine published by Compute! Books £10.95. A good compilation of some of the better articles in Compute! magazine.

**Microsoft Basic - Second Edition** (N/X) by Ken Knecht published by Dilithium Press $15.95. This is the definitive third-party version for those of you with Microsoft Basic.

**Atari Player-Missile Graphics in Basic** (A/G) by Philip C. Seyer published by Reston $14.95. Slightly over-priced, but if you're into P/M graphics you'll pay anything, won't you?

**Talking to the World** (N/G) by John Newgas published by Century Communications Ltd. £5.95. A very succinct introduction to the world of the MODEM. Although aimed at all micro owners, it does not ignore the existence of the Atari and even includes a type-in listing of that well-known terminal program JTERM (Ver.3.5). Worth buying for this program alone!

**The On-Line Handbook** (N/G) by Ray Hammond published by Fontana £4.95. Once that MODEM revolution starts, you're going to need this book. Poor quality paper, but what do you expect for this price?!

**The Visicalc Book - Atari Edition** (A/X) by Donald H. Beil published by Reston $14.95. If you managed to fork out for Visicalc, you won't wince at this price! A good, clear explanation of how to handle this deservedly famous program, which somehow loses some of its speed on the Atari (even with FASTCHIP!).

**Atari Programming with 55 Programs** (A/G) by Linda M. Schreiber published by TAB Books Inc. $13.95. A very earnest straightforward account. All right, but not very exciting!

**Fun Mathematics on your Microcomputer** (N/G) by Czes Kosniowski published by Cambridge University Press £5.95. For those of you who find maths enjoyable! Yes, we even find ourselves amongst Atari owners!

**Programming your Atari Computer** (A/G) by Mark Thompson published by TAB Books Inc. $11.50. Some good fundamental stuff here, it even gets down to Boolean algebra, Venn and Veitch diagrams, something you don't often find in the other books!

**Compute!'s First Book of Atari Graphics** (A/G) by the Editors of Compute! Magazine published by Compute! Books £10.95. Some very useful programs such as Textplot and Superfont are included.

**Compute!'s Second Book of Atari Graphics** (A/G) by the Editors of Compute! Magazine published by Compute! Books £10.95. More graphic utilities like Fontbyter and Screenbyter make this a reasonable buy.

**Making the most of your Atari** (A/G) by Paul Bunn published by Interface Publications £8.95. What lets this book down is that it's really a 100 pager masquerading as a 178 one! Blank spaces proliferate! A pity because Paul has included some little gems of programming here.

**Learning to use the Atari 400/800 Computer** (A/G) by Susan Fry published by Gower Publishing Co. Ltd. £4.95. A good elementary introduction to the mysteries of the Atari.

**Basic Exercises for the Atari** (A/G) by J. P. Lamoitier published by Sybex $12.95. A series of programs for a number of financial and statistical applications. Clear but uninspired!

**Maths+Computers=Fun** (N/G) by G. T. Childs published by Sigma Technical Press £6.25. Although in Sharp and Apple Basic, the programs are easily transferable into our version. The level of maths range from primary to sixth form. A very enthusiastic approach has been adopted which works well.

**Atari Adventures** (A/G) by Tony Bridge published by Sunshine Books £5.95. A good introduction to adventuring, particularly of the D&D genre. A full length graphic/text adventure game 'The Eye of the Star Warrior' may be typed in. I must get around to it!

**Hackerbook for your Atari Computer** (A/X) by H. C. Wagner published by Hofacker GmbH $9.95. Strictly for the 'dyed in the wool' machine language programmer.

**How to program your Atari in 6502 machine language** (A/X) by Sam D. Roberts published by Hofacker GmbH $9.95. An expensive but reasonably clear explanation of this difficult topic.

## DISPENSABLE

**Atari Basic - Learning by Using** (A/G) by Thomas E. Rowley published by Hofacker GmbH $9.95. Another book with a surfeit of blank spaces! Very bitty!

**Games for the Atari** (A/G) by Sam D. Roberts published by Hofacker GmbH $7.95. Some of this book isn't all that bad. Despite the title, there are a few sections concerned with game programming theory which are quite useful.

**Compute!'s First Book of Atari** (A/G) by the editors of Compute! Magazine published by Compute! Books £10.95. Compute!'s first attempt at anthologizing articles from the magazine which wasn't completely successful. The inclusion of the then Marketing V.P.'s views are a yawn, and the comparison between Atari Basic and PET Microsoft Basic seems pointless, to say the least. Such articles may be justifiable in the monthly magazine, but in an anthology?!

**Machine Language for Beginners** (N/G) by Richard Mansfield published by Compute! Books £11.95. Here Atari has to share the book with VIC, C64, Apple & PET. So it is not too surprising that there are better books of this kind available in the U.S.

**The Atari Basic Source Book** (A/X) by Bill Wilkinson et al. published by Compute! Books £10.95. Definitely for the masochists amongst us. This one gets a lot of rave reviews elsewhere, so be warned!

**Inside Atari DOS** (A/X) by Bill Wikinson published by Compute! Books £14.95. You may blench at this price for 108 pages. However, 10% of Atari users will find it essential.

**Advanced ATARI BASIC Tutorial** (A/G) by Robert A. Peck published by Howard W. Sams & Co., Inc. $11.95. Tends to labour some of its points too much with consequent loss of impact.

**Getting started on your Atari** (A/G) by Hartnell & Bunn published by Futura Publications £2.95. This approach has been done so much better elsewhere. It has all the signs of a 'rush' job!

**The Atari Assembler** (A/X) by Inman & Inman published by Reston $12.95. A straightforward account and don't forget you'll need that Atari Assembler cartridge.

**Home Applications and Games for the ATARI Home Computers** (A/G) by Timothy P. Banse published by Little, Brown & Co. $14.50. A large format book, presumably to justify the price! Some useful, but not exceptional games and applications programs.

**Basic Computer Simulation** (A/G) by Lawrence L. McNitt published by TAB Books Inc. $15.50. Over 300 pages of simulation programs in TRS-80 Basic which are easily convertible to Atari Basic. This could have been a much more interesting book considering the simulations selected.

**Writing Strategy Games on your Atari computer** (A/G) by John White published by Sunshine Books £5.95. If you're into strategy gaming, then this one is for you. I must type in Warp Trog sometime!

**Games for your Atari** (A/G) by Paul Bunn published by Virgin Books £2.95. A reasonable set of games listings at a most competitive price.

**The Atari Book of Games** (A/G) by James, Gee & Ewbank published by Granada Publishing £5.95. 21 unsensational games despite what it says on the back cover!

**Get More From The Atari** (A/G) by Ian Sinclair published by Granada Publishing £5.95. Done so much better elsewhere.

## DISPOSABLE

**Computer Tutor: Atari** (A/G) by Orwig & Hodges published by Little, Brown & Co. $15.95. Another 300 page large format book. Programs in both Basic *and* Microsoft, but *boring* listings!

**Awesome Games for your Atari Computer** (A/G) by Renko & Edwards published by Addison-Wesley Publishing Co. £3.95. 'Awful Games. . . . .'. Need I go on?!

**Sixty Programs for the Atari 400/600XL/800** (A/G) by Erskine et al. published by Pan Books £5.95. Only one program interested me enough to type it in. It wouldn't run, hence no support from me!

**32 Basic Programs for the Atari computer** (A/G) by Rugg et al. published by Dilithium Press $19.95. At first sight a very good book, then you type one in and the illusion is soon shattered!

**Astrology - A look into the future** (A/G) by Sam D. Roberts published by Hofacker GmbH $9.95. I typed it in, it wouldn't run and so I complained to the publishers who sent me a cassette which did. I had to polish it up in order to get rid of the American and Teutonic bias, but it works o.k. now. Having said that, the natal chart is screened in blue and white with graphics 8. To deny the Atari the chance of outputting this chart in 'glorious technicolor' seems very myopic. . . . . . disappointing!

**Stimulating Simulations (Atari version) 2nd Edition** (A/G) by C. W. Engel published by Hayden Book Company Inc. $5.95. Bull! Another title that should be brought to the attention of the Advertising Standards Authority! 12 undistinguished listings.

**Atari Sound and Graphics** (A/G) by Albrecht et al. published by John Wiley & Sons $9.95. Avoid this one, you won't regret it. Very mediocre.

**101 ATARI Computer Programming Tips & Tricks** (A/G) by Alan North published by ARCsoft Publishers $8.95. The average length of these 'programs' is about 10 lines. . . Imagine how interesting they can get. . . ZZZZZZ. . . . . . Sorry!

## BIBLIOGRAPHY


1. ATARI Books Reviewed
   by Cris Popenoe & Lee Pappas
   ANALOG computing - No. 12 JULY/AUGUST 1983 pp76 - 79
2. ATARI Book Reviews
   by Lee Pappas
   ANALOG computing - No. 18 APRIL 1984 pp12 - 13
3. ANTIC Bookshelf (New Books for ATARI)
   by the ANTIC staff
   ANTIC (the ATARI resource) - Vol 3 No 9 JANUARY 1985 pp65 - 67
4. Ample ATARI Literature
   Personal Computer News - PCN Micropaedia
   Vol 17 Part 2 pp412 - 413
5. Book Reviews
   by Jack Schofield
   Practical Computing - OCTOBER 1984 pp179 - 180


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# ATARIWRITER and the 1027

by Phil Rae

Now that several shops are offering package-deals on Atari equipment, it is reasonable to assume that there are some of you out there who find yourselves in possession of an Atari computer, disk-drive, 1027 printer and the ATARIWRITER word-processor cartridge.

One of the first things that you will have noticed whilst unpacking the equipment, is that the manual supplied with the 1027 is ludicrously inadequate. It is basically of little help in any capacity. Whilst ATARIWRITER comes with quite a good manual, possibly due to the Datasoft connection, it was in fact published before the introduction of the 1027, and so makes no reference to this printer.

So whilst these manuals mutually ignore one another, you are left wondering how best to use the equipment.

Having used this combination now for some months, I feel able to offer a few tips. If these are read in conjunction with the article entitled 'Secrets of ATARIWRITER' from Antic vol.3 #11, then some of the mysteries may be solved.

When ATARIWRITER prompts you to select a printer, use selection 3 (the ATARI 820).

### 1) PRINT FORMATTING BLOCK

It is advisable to change the bottom margin value to [CTRL B]8, the top margin to [CTRL T]0, and the page-length to [CTRL Y]126. This will prevent the 1027 from starting to print too far down the page. More importantly, as it has no way of knowing whether or not the paper has run out, it will prevent the printer from printing off the bottom of the paper and onto the platen. When the paper is inserted, it should be lined-up using the plastic edge of the top cover, and then wound back to the metal guideline.

It would be a good idea at this point to add a second line of commands to the print formatting block. Here would be a suggestion:

[CTRL O]27 [CTRL O]23 [CTRL C] [CTRL F] @ [CTRL W] followed by [RETURN].

The cumulative effect of this is that the international character set is turned on - ([CTRL O]27 [CTRL O]23), - and each page of the document is automatically numbered and printed at the bottom - ([CTRL C] [CTRL F] @). Additionally, [CTRL W] will set up the 'page-wait' command which will make the 1027 stop printing at the end of a page, and wait for the RETURN key to be depressed before continuing. The insertion of the 'page-eject' code [CTRL E] at any point in the text will, of course, still cause the 1027 to cease printing at that point, and continue when a fresh sheet of paper has been put in place and the [RETURN] key has been pressed.

Before saving this amended print formatting block to disk, it may also be worth your while to add your address immediately underneath, as text, possibly justifying each line of the address to the right margin, with the [CTRL C] [CTRL C] command. If this is saved with the file name LETTER, much time is saved by not having to type it out on every occasion.

### 2) THE INTERNATIONAL CHARACTER SET

Initially, this may not seem to be of too much importance, unless you are prone to bursts of French or Spanish for unaccountable reasons. However, the pound-sign also comes into this category, and that might be of more interest. It is always a good idea to put the control codes for the I.C.S. at the beginning of every document. It does no harm, and can be useful. Having done this (see above), the pound-sign can be called up by typing [CTRL O]008. All of the other international characters can similarly be printed by typing [CTRL O] followed by the appropriate decimal-code, as given in the 1027 manual.

### 3) THE SEARCH & REPLACE FUNCTION

This function is easy to use and is explained thoroughly in the ATARIWRITER manual. It is generally used for correcting spelling errors in a document, by replacing every occurence of the mis-spelt word with the correct version. However, it has more uses than that alone. For example, if you are producing a document which necessitates great use of a printer control-code, much of the labour can be reduced by universally replacing the code throughout the document by a single character.

Using the pound-sign as an example, you could type [CTRL O]* wherever you wanted the pound-sign to appear, and then, at the end of the document, you would be able to replace, at a stroke, every asterisk with 008. The time saving can be considerable over the course of a large document. Do not however try to replace the [CTRL O] itself, as this will not work unfortunately!

### 4) THE UNDERLINING FACILITY

Doubtless you will have tried to underline text, using ATARIWRITER and the 1027, by switching to inverse video as suggested in the ATARIWRITER manual. This will not have worked. The best way to start underlining is to

insert control codes [CTRL O]27 [CTRL O]25. To stop underlining, insert control codes [CTRL O]27 [CTRL O]26 - or simply hit the [RETURN] key. Note that ALL text (including spaces between words) will be underlined, using this method.

### 5) DOUBLE-COLUMN PRINTING

At first sight this would appear not to be possible with the 1027, as the second column requires the printer to reverse directions, and print from the bottom of the page to the top.

There is a way round this on the 1027, but it can be a little tricky. Firstly, change the left margin in the formatting block to [CTRL L]0, and the right margin to [CTRL R]38. Once you have inserted your text, enter the 'page-eject' command - [CTRL E] - at the point where you would like the first column to end. After this, insert control codes [CTRL L]42 and [CTRL R]80. Whilst printing, the 1027 will now stop at the end of the first column, allowing you to put THE SAME PAGE back into the printer, in order to get the second column. This technique can be continued throughout the document, alternating between the two sets of codes for the left and right margins as necessary.

If you use this method, please remember that ATARI-WRITER will consider each of the two columns to be a separate page, therefore page numbering will not be possible, and print-previews will require you to scroll across the screen to find your text. Additionally, if you will be using the international character set, it may be necessary to repeat the codes [CTRL O]27 and [CTRL O]23 after each column.

### 6) THE INK-ROLLER

Replacement ink-rollers for the 1027 may be difficult to find. However, if the roller is not damaged, or badly worn, it is quite possible to re-ink it, using ordinary stamp pad ink, evenly spread. Be careful not to apply too much ink, and remove any excess with an absorbent tissue. The quality of print will now be as good, if not better, than with a new ink-roller.

### 7) THE PRINTER TIME-OUT

If you are using the 1027 in conjunction with ATARI-WRITER, you may well have experienced the strange phenomena of the printer suddenly stopping all activities for a period of about three minutes, and then continuing as though nothing had happened.

I have heard a wide range of possible reasons for this. It has been suggested that a certain combination of characters cause the printer to 'lock-up'. This is an unlikely explanation, as it seems to happen entirely at random. It has also been suggested that a bug in the operating system of the ATARI computers is to blame. This is more likely, but again, not entirely convincing, as it seems to happen irrespective of which version of the O.S. is used. It could be entirely to do with the printer itself, allowing it time to 'cool down'. Whatever the reason, it is irritating - but I know of no guaranteed way of preventing this from happening. ATARI themselves cannot suggest a cure. Just spend the time quietly contemplating what you can do with the money you saved by not having to buy an interface unit and a printer-driver!

# SPARTADOS

Fortunately for all us Atarians there is a growing interest in the supply market for all types of programs, games, utilities etc. and enhancements. I wrote last time about the 'US Doubler' product, published by ICD Inc., which converts the 1050 disk drive to double density. Included in the package was SpartaDOS.

SpartaDOS joins the disk operating systems already on the market, the three published by Atari (so far), DOS-XL by O.S.S., TOP-DOS by Eclipse Software and there are probably others of which I am not aware. I consider this new DOS to be another step forward and may prove to be the best so far.

SpartaDOS supports single, dual 1050 and true double densities, single and double sided, 5¼ in. and 8 in. disk drives and even a hard disk drive. Apparently the new 3½ in. drives are not supported and this may be a serious error. I expect that ICD are not unaware of the situation and that they will issue an enhancement as soon as the new drives become available.

SpartaDOS is a mainly memory resident disk operating system in that it resides in RAM and is therefore always available. This means that no program or data is lost when you switch to and from DOS and thus the DOS 2 MEM.SAV file, which always seemed to me to take ages to load, is not used or necessary. Unlike DOS 2, SpartaDOS is command-driven which means that you simply type a command and then leave the DOS to it. DOS 2 uses a menu structure from which you make your selection and this is somewhat time consuming. Not all the commands, however, are RAM resident. Most of the commonly used ones are, such as ERASE, RENAME, DIR (for directory of files), CAR (to run a cartridge and return to program), LOAD, SAVE, APPEND and RUN (binary files) and others. It is a pity but some other DOS utilities that you will use have to be loaded from a master disk. These include FORMAT, INIT, SPCOPY, UNERASE (yes!), DUPDSK etc. which ICD call external commands. You could, of course, copy some of these on to your working disk and then they would be almost immediately available. All the necessary DOS 2 functions are included on SpartaDOS along with a lot more. I shall only describe the additional features and differences and not waste your time with the familiar ones.

Unusually SpartaDOS requires that you give each disk a 'volume' name at format time such as ADVENT1, DISK12, 01234 etc. which I guess ensures that disk insertion errors are not made when duplicating a disk on a single drive system. I cannot think of any other valid reason for this requirement. Note that DOS must be written to each disk at format time where it acts as a boot file. The DOS's available are firstly, the normal full DOS, and secondly, a special short DOS, using very little memory for loading game disks that do not require to be written to, and each can be used at normal or high (ultra) speed. You can only use the high speed DOS if your drive is equipped with the US Doubler or Archiver II chips, and as I showed last time, reading is performed at about three times faster and writing at between two and five times faster than other DOS's.

Sector links are handled differently than DOS 2 or DOS-XL with the result that, in single density format with full DOS, 665 sectors, (or 687 sectors, with the short DOS) each of 128 bytes, are available for your use compared to 707 125-byte sectors in DOS 2. In double density full DOS 689 256-byte sectors are available. This represents a data storage capacity of over 172K bytes!

The number of files you can have on a disk is virtually unlimited through the use of sub-directories. There is one main directory and this can have up to 128 files or sub-directories, each of which in turn can be subdivided into 128 further sub-directories and so on. This is obviously intended for hard disk drives which are capable of storing in excess of 15 megabytes (and soon to be available from Atari if Jack Tramiel's statements are anything to go by). Files will have to be very small for this to be effective on 5¼ in. drives. None of my disks have more than 35 files, but the facility is there should you need it.

On my 48k 800 the standard speed SpartaDOS has a LOMEM of $2000 and that of the high speed $2300, which means that some non-SpartaDOS utilities that load at below $2300 will crash (or lockup your system). To avoid this you would have to use a non-high speed DOS or relocate the utility. You will therefore understand why the high speed DOS leaves you with only 30734 bytes for BASIC programming use. On the 64K XL machines it should be possible to move the DOS into the otherwise unused RAM under the operating system ROM and thus recover most of the lost RAM. XL users may therefore have about 37K bytes free for BASIC if ICD or a clever programmer can come up with the goods.

AUTORUN.SYS is not used in SpartaDOS, instead a more flexible and easy to implement STARTUP.BAT file is used to load any number of machine code files in sequence, for example you could have a batch file load an English language error message file, then go to the BASIC cartridge and run a program, all automatically on switching on the computer. However if you should boot a disk containing such a batch file or type CAR when in DOS without having inserted the BASIC cartridge the system crashes forcing you to reboot. I would much prefer the system to switch back to DOS or for an error message to be printed to screen rather than just freezing.

To execute a machine code file that has been saved under the name 'filename.COM' with the INIT/RUN pointers, you only need type its name without the extender. LOAD 'filename.EXT' is used to load and not run a machine code file, in the same way as the BASIC LOAD command, for example if you want to load a special character set, and RUN is used to execute a file that is already in memory or RUN [address] to run a file starting at that byte. All this seems very sensible to me.

SPCOPY is used to copy files from any disk of any density

## Reviewed by R.A. Matulko

to another disk which allows you to transfer your single density DOS 2 or DOS-XL files to and from the high speed double density SpartaDOS disks very easily, especially if you have more than one drive. Using a single drive system involves some disk swapping.

LOCK and UNLOCK are not implemented in SpartaDOS and, as I hardly ever used these, I do not feel at all unhappy by their omission.

Possibly one of the most useful DOS utilities will be UNERASE. This enables you to recover accidently, or otherwise, deleted files as long as they have not been overwritten. How many times have you deleted a file only to find that you could not live without it? You might like to know that with DOS 2, POKEing 3926,234 and 3927,234 allows you to load a deleted file which can then be reSAVED. But remember to press RESET before saving.

All files are dated and timed when written but I have not felt the need to utilise this function mainly because the time/date has to be reset every time at switch on and the SpartaDOS clock runs inaccurately because it is linked to vertical blank occuring 50 times a second compared to 60 used in the USA for which it was designed. SET can be used to correct the date and time if you want to use time/dating.

Those using the 850 interface or the ATR 8000 will appreciate the RS232 handlers included which do not require reloading when switching to and from DOS.

An interesting range of XIO Atari BASIC functions are available and full instructions for their use are included in the manual. For example XIO 40 is used to load, and XIO 41 to save a binary file.

As you would expect a very readable but detailed manual is included giving examples for most functions which novices should be able to follow without difficulty. It also includes some general information about disks together with a warning about the wide practice of notching and writing to the reverse side of single sided disks.

SpartaDOS is available from ICD's UK distributers, Zoomsoft, and costs £39.95 or, better still, it is included in the US Doubler package for a total of £79.75. My impression of SpartaDOS is favourable, I like the ease of command processing, being able to switch instantaneously to and from DOS without losing any data, but especially the speed of reading and writing on my US Doubler converted drive. On its own I am not convinced that SpartaDOS offers that much more over DOS-XL, which uses less RAM anyway, can already be used in extended memory form to increase usable RAM, and costs less. However when SpartaDOS is used in conjunction with the US Doubler hardware chips, the package comes into its own. My overall assessment, then, is excellent. For owners of the 1050 disk drive or those who are considering purchasing one I can thoroughly recommend the US Doubler package to you as a 'best buy'. It is well worth every penny of the asking price.

# TURN THE TABLES

**by Jim Flewker**

Turn the tables is a counting game intended for young children of age three upwards that can also be used as a memory test for older children.

Parents will need to help young children and the program can be explained as a 'fairy tale' thus: You are travelling through a strange land when you come to a kingdom where the ruler challenges 'Build a Castle and you may stay in the Kingdom. To do this you must count correctly all the items on the Magic Table. Each time you do so correctly the items will be turned into diamonds with which you may build your castle. If you are wrong the items will turn into Bugs which are no use to anyone. Tell me your name and the Court Piper will play a tune for you!'.

The program is used with a joystick except for setting the initial options and typing in the player's name. The player uses the joystick to move an arrow to a number between 1 and 11 in response to an on-screen question. When the arrow points to the number which the player thinks is correct, the button is pressed and either diamonds or bugs appear. As the player acquires enough diamonds for the next stage of the Castle, the Castle built so far appears in the centre window. This can be cleared by pressing the joystick button. When the Castle is completed pressing the button will re-run the game.

The score is shown at the top and the number of diamonds needed is shown in the upper text window. In the normal game the table remains on the screen for the child to count the items but in the memory game, the table disappears after a selected number of seconds.

OPTIONS

Various options can be selected at the beginning of the game by the parent.

RANGE - The number of different items from 4 to 7. The more items there are, the fewer of each will appear.

BASE - The number of diamonds at which the first part of the Castle appears.

MEMORY TEST - If chosen, the number of seconds (in multiples of 5) that the table stays on screen may be selected.

*Jim Flewker is Head of Languages at Sir John Nelthorpe School, Brigg, South Humberside. He also sent in a number of programs designed to teach children French and German which may be of interest to some parents.*

```
QJ 0 REM *****************************
YC 1 REM *      Turn  the  Tables     *
BQ 2 REM *       A Counting Game      *
FO 3 REM * (c) 1985 by J.W. Flewker   *
IY 4 REM * ------------------------- *
RJ 5 REM * PAGE 6 MAGAZINE - ENGLAND *
QP 6 REM *****************************
NM 7 REM
PL 8 DIM A$(2),H$(1),NAME$(10),HM$(10),TA
   BLE(16,13),DONE(7),SCENE$(120),YN$(1),
   BL20$(20),BL37$(37):X=1
WI 10 POKE 752,1:GOTO 20000
AV 14 GOSUB 10000:POKE 752,1
JS 15 TOTAL=7:SUM=6:SCORE=0:FLAG1=0:GOSUB
    8000
ZX 16 H=17:V=4:START=1:BLANK=1
DQ 20 BL20$="                    ":BL37$=
   "
   "
AN 25 IF START=0 THEN 2000
VY 60 REM STRING FOR CASTLE SCENE
FZ 62 RESTORE 65:NR=1
DY 63 READ CR:IF CR=-1 THEN 70
AM 64 SCENE$(NR)=CHR$(CR):NR=NR+1:GOTO 63
QK 65 DATA 32,32,32,32,32,32,32,47,32,32,
   32,32,171,32,32,32,32,32,32,32,32,32,3
   2,32,32,32,47,61,47,32,32,32
KP 66 DATA 47,32,32,32,32,32,32,32,32,32,
   32,32,171,32,40,61,40,32,32
BT 67 DATA 47,40,47,32,171,32,32,32,32,32
   ,32,32,32,47,60,61,61,61,60,47,40,61,6
   1,60,47,32,32,32,32
BJ 68 DATA 32,32,32,32,61,40,61,61,61,40,
   61,61,61,61,61,61,32,32,32,32,9,9,9,9,
   61,61,40,45,40,61,61,61,61,61,61
IB 69 DATA 61,9,9,9,9,-1
IJ 70 GOTO 2000
EM 100 REM DECIDE WHAT TO COUNT
FZ 102 OBJ=INT(KINDS*RND(0))+1
XB 103 IF DONE(OBJ)=0 THEN DONE(OBJ)=1:TO
   TAL=TOTAL+1:GOTO 100+10*OBJ
MQ 104 GOTO 102
NR 110 HM$="cups":NUM=CUPS:GOTO 190
HP 120 HM$="spoons":NUM=SPOONS:GOTO 190
```

```
AF 130 HM$="mice":NUM=MICE:GOTO 190
SP 140 HM$="forks":NUM=FKS:GOTO 190
PW 150 HM$="glasses":NUM=GLASSES:GOTO 190
ZB 160 HM$="plates":NUM=PLATES:GOTO 190
JP 170 HM$="knives":NUM=KNIVES:GOTO 190
KY 190 IF NUM=0 THEN TOTAL=TOTAL-1:GOTO 1
   02
AE 195 RETURN
DU 200 REM PRINT NEW TABLE
KX 205 POKE 87,2
GG 210 CUPS=0:SPOONS=0:KNIVES=0:FKS=0:GLA
   SSES=0:PLATES=0:MICE=0:TOTAL=0:SUM=0
WW 215 FOR VE=1 TO 3 STEP 2:FOR HR=2 TO 1
   6 STEP 2:TABLE(HR,VE)=0:NEXT HR:NEXT V
   E
LB 225 POKE 87,2
SM 230 FOR VP=1 TO 3 STEP 2:FOR HP=2 TO 1
   6 STEP 2
TC 250 POSITION HP,VP
ZA 260 CHAR=INT(KINDS*RND(0))+1:PRINT #6;
   CHR$(CHAR);:TABLE(HP,VP)=CHAR
WU 270 CUPS=CUPS+(CHAR=1):SPOONS=SPOONS+(
   CHAR=2):MICE=MICE+(CHAR=3):FKS=FKS+(CH
   AR=4)
QS 275 GLASSES=GLASSES+(CHAR=5):PLATES=PL
   ATES+(CHAR=6):KNIVES=KNIVES+(CHAR=7)
UC 280 NEXT HP:NEXT VP
ZU 290 FOR Q=1 TO 7:DONE(Q)=0:NEXT Q
VD 295 SUM=(CUPS>0)+(SPOONS>0)+(KNIVES>0)
   +(FKS>0)+(GLASSES>0)+(PLATES>0)+(MICE>
   0)
AL 297 RETURN
KG 300 REM CHECK ANSWER
JP 310 LOCATE H+1,4,ANSR
LL 315 LOCATE H+2,4,UNIT:IF ANSR<49 THEN
   325
SI 320 IF UNIT>=48 THEN CHOICE=UNIT-48+10
   *(ANSR-48):GOTO 340
TP 325 IF UNIT<48 AND ANSR<49 THEN GOSUB
   1500:GOTO 360
QG 327 IF ANSR<49 THEN CHOICE=UNIT-48:GOT
   O 340
KP 330 CHOICE=ANSR-48
CL 340 IF CHOICE=NUM THEN GOSUB 500:IF SC
   ORE>=OLDSC+10 THEN GOSUB 700
MN 345 IF CHOICE=NUM THEN 360
SF 350 GOSUB 400
JA 360 H=17:HH=H
UM 370 GOSUB 14000
ZR 390 RETURN
NB 400 REM BUG APPEARS
KM 410 POKE 87,2
NX 430 FOR VE=1 TO 3 STEP 2
PS 435 FOR HR=2 TO 16 STEP 2
UI 440 IF TABLE(HR,VE)=OBJ THEN POSITION
   HR,VE:PRINT #6;"@":FOR ZZ=40 TO 250 ST
   EP 10:SOUND 0,ZZ,12,8:NEXT ZZ
VY 450 SOUND 0,0,0,0
MZ 480 NEXT HR:NEXT VE
ZS 490 RETURN
PN 500 REM DIAMONDS/INCREMENT SCORE
PU 510 FLAG1=0:FLAG1=FLAG1+(SCORE=0)
LE 525 POKE 87,2
NY 530 FOR VE=1 TO 3 STEP 2
PT 535 FOR HR=2 TO 16 STEP 2
SL 540 IF TABLE(HR,VE)=OBJ THEN POSITION
   HR,VE:PRINT #6;"[illegible]":SCORE=SCORE+1
MU 550 NEXT HR:NEXT VE
CR 560 FOR MU=126 TO 63 STEP -6
YH 570 SOUND 0,MU,10,8:NEXT MU
XX 580 FOR MU=33 TO 63 STEP 3
CS 585 SOUND 0,MU,10,6:NEXT MU:SOUND 0,0,
   0,0
XT 590 NEED=(50+BASE)-SCORE:RETURN
KH 600 REM UPDATE SCORE
KO 610 POKE 87,2
AN 615 IF BLANK=1 THEN BLANK=0:POSITION 0
   ,0:PRINT #6;BL20$
UN 620 POSITION 4,0:PRINT #6;"diamonds: "
   ;SCORE
JS 630 POKE 87,0
XV 640 IF NEED<=0 THEN 670
PE 650 POSITION 20+(NEED<10),3:PRINT " ";
   NEED:RETURN
YU 670 POSITION 2,2:FOR T=1 TO 2:PRINT BL
   37$:NEXT T:POSITION 0,2
LE 680 ? "******* your castle is ready, "
   ;NAME$:? " and you may take my piper w
   ith you.":RETURN
JS 700 REM SCENE BUILDER
NX 701 POKE 87,2:GOSUB 14000
UZ 705 GOSUB 600:GOSUB 12000
LT 710 ROW=5-INT((SCORE-BASE)/10):OLDSC=O
   LDSC+10
OG 720 GOSUB 1300:POKE 87,2
IP 730 POSITION 0,ROW:PRINT #6;SCENE$(1+R
   OW*20)
UX 735 GOSUB 900
LF 740 IF STRIG(0)<>0 THEN 740
GI 742 SOUND 0,60,10,6:FOR DEL=1 TO 20:NE
   XT DEL:SOUND 0,81,10,6:FOR DEL=1 TO 30
   :NEXT DEL:SOUND 0,0,0,0
LV 745 IF ROW=0 THEN CLR :RUN
SI 750 GOSUB 1300
WJ 760 TOTAL=SUM
AS 770 GOSUB 14000:RETURN
KJ 900 REM TUNE FOR CASTLE
VG 905 RESTORE 1000
CG 910 READ S:READ F:IF S=-1 THEN 950
PF 920 SOUND 0,S,10,6:FOR DEL=1 TO 5*F:NE
   XT DEL
PH 930 GOTO 910
JW 950 IF ROW<>0 THEN RETURN
VP 960 RESTORE 1280:GOTO 1250
VG 1000 DATA 60,9,45,3,47,4,60,6,47,4,45,
   4,40,8,35,3,47,8
DK 1005 DATA 0,3
QI 1010 DATA 64,4,81,6,91,2,96,2,108,8,12
   6,6,81,10
EA 1015 DATA 0,4
DP 1020 DATA 144,2,126,2,96,2,81,8,91,4,9
   6,4,108,6
ED 1025 DATA 0,4
IM 1030 DATA 144,2,126,2,96,2,81,8,91,4,5
   3,4,60,12
BY 1040 DATA 0,10
AP 1050 DATA -1,0
LL 1250 READ S:READ F:IF S=-1 THEN RETURN
UQ 1260 SOUND 0,S,10,6:FOR DEL=1 TO 3.3*F
   :NEXT DEL
QY 1270 GOTO 1250
HI 1280 DATA 127,6,96,2,91,2,81,2,64,2,60
   ,2,53,2,47,2,45,2,40,2,35,2,0,2
DM 1290 DATA 108,6,91,2,81,2,64,2,60,2,53
   ,2,47,2,45,2,40,2,35,2,0,2
VV 1295 DATA 96,6,81,2,72,2,60,2,53,2,47,
   2,45,2,40,2,35,2,32,2,60,12,0,8,-1,0
VN 1300 REM CLEAR MIDDLE WINDOW
OR 1305 POKE 87,2
WR 1310 FOR D=0 TO 5:POSITION 0,D:PRINT #
   6;"                    ":NEXT D
AL 1320 RETURN
EM 1500 REM REPRINT NUMBERS
OP 1520 IF ANSR>47 THEN POSITION HH+1,4:P
   RINT CHR$(ANSR):ANSR=0
```

```
OO 1530 IF UNIT>47 THEN POSITION HH+2,4:P
   RINT CHR$(UNIT):UNIT=0
AY 1550 RETURN
EL 2000 REM MAIN ROUTINE
SR 2005 IF SCORE>0 THEN GOSUB 600:GOTO 20
   30
YN 2010 POKE 87,2:POSITION 1,0:PRINT #6;"
   hoW ManY ArE tHEre?":GOTO 2025
PA 2025 POKE 87,0:POSITION 0,1:PRINT "***
   **** Find the hidden diamonds *******"
   ;
HA 2030 IF FLAG1=0 THEN 2040
ZP 2035 POSITION 2,2:FOR T=1 TO 2:PRINT B
   L37$:NEXT T:POSITION 2,2
GK 2036 ? "to finish your castle, ";NAME$
   :? ,"you need ";NEED;" more diamonds."
EQ 2040 IF SCORE>0 THEN 2050
WL 2041 PRINT "You have to use the joysti
   ck to make"
FY 2042 PRINT "the arrow point to the rig
   ht number."
CK 2050 POSITION 0,1:GOSUB 12000
TY 2051 IF TOTAL<SUM THEN 2080
HH 2052 IF START=1 THEN START=0:GOSUB 150
   00
IX 2055 POKE 752,1:POKE 87,2
HD 2060 IF MEMTEST=1 THEN POSITION 0,4:PR
   INT #6;"      memorise     "
VZ 2070 GOSUB 200
VG 2072 POKE 19,0:POKE 20,0
EH 2074 P19=PEEK(19):P20=PEEK(20):LEFT=SE
   CS-(5*P19+INT(P20/50))
ZR 2075 IF MEMTEST=1 THEN IF P19<SECS/5 T
   HEN POSITION 2+(LEFT<10),4:? #6;" secs
    left: ";LEFT:GOTO 2074
EX 2076 IF MEMTEST=1 THEN FOR VERT=1 TO 3
   :POSITION 0,VERT:PRINT #6;"
       ":NEXT VERT
RU 2080 GOSUB 100:POKE 87,2
EV 2085 POSITION 2,4:PRINT #6;"
       ":HH=H:H=17
XV 2090 POSITION 2,4:PRINT #6;"how many "
   ;HM$;"?":FOR DEL=1 TO 100:NEXT DEL
MQ 2095 POKE 87,0:X=1:POSITION 1,4:FOR AL
   =1 TO 11:PRINT "  ";X;:X=X+1:NEXT AL
GI 2100 POSITION 17,4:PRINT ">"
FD 2200 S=STICK(0):IF S=15 THEN 2280
BJ 2210 POSITION 17,4:PRINT " "
DF 2215 NX=H-1+2*(S=7):LOCATE NX,4,D:IF D
   >47 THEN FOR Q=1 TO 15:NEXT Q:POSITION
    NX,4:PRINT CHR$(D);
ZF 2220 H=H+(S=7):H=H-(S=11)
SC 2225 IF H<1 OR H>37 THEN H=HH:GOTO 220
   0
AX 2230 IF N>0 THEN POSITION HH,4:PRINT C
   HR$(N)
AP 2250 LOCATE H,4,N:POSITION H,4:PRINT "
   >":SOUND 0,76-H*2,10,4:FOR D=1 TO 7:NE
   XT D:SOUND 0,0,0,0
CD 2260 HH=H:VV=4
LM 2280 ST=STRIG(0):IF ST=0 THEN GOSUB 30
   0:GOTO 2000
JN 2290 FOR D=1 TO 18:NEXT D:GOTO 2200
ZS 8000 REM CHARACTER SET
NJ 8005 RESTORE 8030
HN 8010 CS=(PEEK(106)-8)*256
ZV 8020 DIM MC$(32):FOR I=1 TO 32:READ A:
   MC$(I,I)=CHR$(A):NEXT I:A=USR(ADR(MC$)
   ,57344,CS)
TN 8030 DATA 104,104,133,204,104,133,203,
   104,133,206,104,133,205,162,4
RB 8035 DATA 160,0,177,203,145,205,136,20
   8,249,230,204,230,206,202,208,240,96
QD 8040 RESTORE 8080
ML 8050 READ A:IF A=-1 THEN 8070
KR 8060 FOR Q=0 TO 7:READ Z:POKE CS+A*8+Q
   ,Z:NEXT Q:GOTO 8050
QN 8070 POKE 756,CS/256
CA 8080 DATA 1,0,254,251,251,254,248,112,
   0
NP 8090 DATA 2,7,15,15,14,16,32,64,128
UN 8100 DATA 3,1,1,39,47,110,254,36,68
NY 8110 DATA 4,32,80,168,88,56,4,2,1
KE 8120 DATA 5,0,126,126,126,60,24,24,126
MX 8130 DATA 6,60,66,153,189,189,153,66,6
   0
SH 8140 DATA 7,7,14,28,24,16,32,64,128
GJ 8150 DATA 10,0,24,60,102,195,126,60,0
TX 8151 DATA 11,0,16,25,31,31,31,22,16
RE 8152 DATA 15,24,24,60,60,126,126,255,2
   55
PK 8153 DATA 28,0,0,0,0,0,153,255,255
BZ 8154 DATA 29,255,255,255,255,255,255,2
   55,255
YB 8155 DATA 13,255,231,195,129,129,129,1
   29,129
BL 8156 DATA 8,255,255,239,239,239,255,25
   5,255
TV 8157 DATA 9,4,12,30,60,30,40,8,8
AQ 8160 DATA 32,20,84,127,188,255,120,46,
   48
FO 8190 DATA -1
BO 8200 FOR CODE=33 TO 58:CHAR=CS+CODE*8
KN 8210 FOR Y=0 TO 7:POKE CHAR+Y,PEEK((CO
   DE+64)*8+CS+Y):NEXT Y:NEXT CODE
AQ 8220 RETURN
PF 10000 REM DISPLAY LIST
IN 10005 RESTORE 10050:GRAPHICS 8+16:COUN
   T=5:P559=PEEK(559):POKE 559,0
OY 10010 DLIST=PEEK(560)+PEEK(561)*256
NB 10020 POKE DLIST+3,71
BD 10030 READ A:IF A=999 THEN 10050
LF 10040 COUNT=COUNT+1:POKE DLIST+COUNT,A
   :GOTO 10030
MR 10050 DATA 7,2,2,2,7,7,7,7,7,7
SY 10060 DATA 2,2,2,2,2,999
EM 10070 POKE DLIST+20,65
AK 10080 POKE DLIST+21,32
XZ 10090 POKE DLIST+22,156
LJ 10200 POKE 559,P559:RETURN
PW 12000 REM ALTER SCREEN POINTERS
WU 12020 SCREEN=PEEK(88)+PEEK(89)*256
QL 12025 OLDSCREEN=SCREEN
BN 12030 SCREEN=SCREEN+2*20:SCREEN=SCREEN
   +3*40
XT 12040 HIBYTE=INT(SCREEN/256):LOWBYTE=S
   CREEN-HIBYTE*256
QD 12050 POKE 88,LOWBYTE:POKE 89,HIBYTE
EH 12080 RETURN
RZ 14000 REM RETURN SCREEN POINTERS
FI 14020 HIBYTE=INT(OLDSCREEN/256):LOWBYT
   E=OLDSCREEN-HIBYTE*256
PZ 14030 POKE 88,LOWBYTE:POKE 89,HIBYTE
DZ 14050 RETURN
HA 15000 REM INPUT NAME
VE 15020 POSITION 2,1:PRINT #6;"what is y
   our name":INPUT NAME$
GS 15030 GOSUB 1300
US 15035 POKE 87,2
TC 15040 POSITION 1,1:PRINT #6;"GOOD LUCK
   ,";NAME$:POSITION 1,3:? #6;"PIPER, PIP
   E FOR "
HG 15045 POSITION 17-LEN(NAME$),4:PRINT #
   6;NAME$:GOSUB 900
```

continued on page 49

# Book Reviews




ATARI BASIC Faster and Better is one of those American books that I have had my eye on for some time but with many books the advertising blurb turns out to be more interesting than the book itself, so I held off sending for it. Now that I have a copy, I wish that I had sent for it earlier. The title really does say it all.

The Introduction states 'Learning to program the 800 is like learning to play the piano. It's easy to play simple tunes from the very first day but you can spend a lifetime improving your technique and expanding your repertoire.' That sums up nicely just what this book helps you to do.

The author Carl Evans has collected together hundreds of hints and tips and small (and not so small) routines in both BASIC and machine language to enable you to get the best from your programming efforts. The book started life as the author's own personal notebook of routines which were meticulously noted down each time something new was developed. Routines such as dates, formatting screens, sorts, memory saving techniques, keyboard handling and many more were saved by him on disk as seperate 'LIST and ENTER' routines so that each time a program was developed he merely had to ENTER the routines needed. Over 80 of these routines are presented in this book with explanations to enable you to use them in your own programs. Uniquely, every routine is numbered in sequence throughout the book so that you can save them all to disk and call any routine into your program without fear of contradicting line numbers.

Aside from the routines, which alone justify the purchase, both simple and complex programming techniques are explained and unless you really do know it all you are sure to learn at least a little and probably a great deal. There are several appendices including a complete explanation of all the error codes with explanations and examples of why they occur and how to put them right. With one or two minor exceptions, such as the use of 'spare' locations in page zero, the book applies to the entire range of Atari 8-bit micros and is a worthwhile investment that will have you producing far superior programs without having to work out all the details. You will most probably also include several routines that you might never have otherwise thought of.

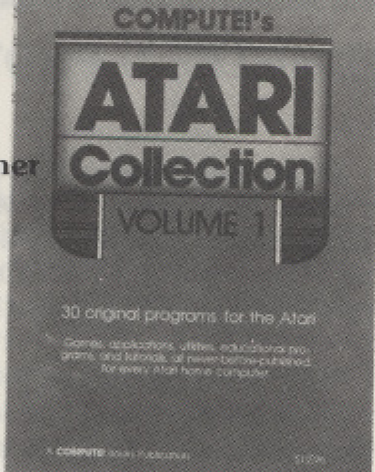
The book is not primarily concerned with games programming so Player Missile Graphics are not covered but many of the techniques will be useful in introductions, scoring and general 'non-play' routines. If you want to write serious or educational or 'non-joystick' programs you will find much helpful advice packed into 300 pages of this large format book.

ATARI BASIC Faster and Better is priced at £16.95 and should be available from your dealer or from the importers, Software Express International.

## COMPUTE!'s ATARI COLLECTION Volume 1

**published by COMPUTE!**
**Price £10.95**

**Reviewed by Allan Palmer**




The latest title in COMPUTE!'s series of Atari-specific publications comprises a mixed bag of games, applications, utilities, educational programs and tutorials. All the articles in this collection have the distinction of appearing in print for the first time. I do not know why this book is not titled 'COMPUTE!'s Fourth Book of Atari', as it is presented in the same successful format as the previously published First, Second and Third Books of Atari. Perhaps someone thought continuing the numbering sequence would create the impression that this was a book about Forth on the Atari?

The selection of articles is well balanced covering a wide range of subjects for the beginner up to intermediate level Atari enthusiasts. There are games, including a scrolling tank game, a Reversi variant, a 'Dungeons & Dragons' style adventure and notably a game with a somewhat different theme of 'Take a photo of the Loch Ness Monster'! Coincidentally, as I was preparing this review I was looking through some recent issues of ANALOG magazine, and in the 'Our Game' column was a suggestion for a 'Nessie' based game from Trevor Skeggs of Milton Keynes. Someone thought it was a good idea, Trevor!

On the applications front, those lucky enough to possess a printer may find the Shopping List program a means to justify their Atari system to their wives. The program allows for the production of neatly formatted shopping check lists. Different lists for different shops may be set up and called in as appropriate. Here is a chance to overcome the difficulties with those cryptic notes which your other half calls a shopping list. No more problems thinking that the text '1 S.R.' means a tube of toothpaste when in fact you are being asked to get a bag of Self Raising flour!

If you are musically minded there are three music editors to enable you to utilise the sound capabilities of your ATARI. Also presented is a routine which will enable music, generated by your Atari, to be played whilst your own BASIC program is running. There are also eight programs in the educational category included.

Overall, the thirty articles in this collection make another fine book from COMPUTE! for Atari owners continuing the excellent standards already set. What next? How about a collected edition of Bill Wilkinson's 'Insight Atari' columns. That would be worth ordering sight unseen! □

# THE SOFTWARE REVIEWS

## JUGGLES V PROTO

**One parents view of the educational programs JUGGLES HOUSE and JUGGLES RAINBOW from Atari and the PROTO series from Educational Software.**

The grass needs cutting, the house needs painting, but there are more important things to do. Your foot is tapping uncontrollably to a jazzy version of Bach's Tocatta and Fugue in D Minor..... *GYRUSS*..... You're on your last life and only one warp from Earth .....*SCORE 210,000* ..... when suddenly the door bursts open and a voice shouts "Daddy, can I have a go on the computer?" .....*ZAP!!* ..... Game Over. Familiar scene?

My daughter is four and a half years old and all she wants to do is press the letters on the keyboard and get that little beeping sound. So I thought I would get Juggles House and Juggles Rainbow to enable her to play on the computer while I was out at work or on the golf course. Then I could try for Earth again in peace.

Juggles House and Juggles Rainbow are supposed to 'introduce spatial concepts' to 3 to 6 year olds. In other words it shows them the differences between inside and outside, left and right and above and below. They are simple and colourful and use 'masks' to relate areas on the keyboard to areas on the screen. The accompanying documentation is excellent. My daughter loved them. Both games are similar and take the form of a very junior quiz. You start by placing your masks on the keyboard to match the screen. A message appears on screen asking you to 'Press Right' - she presses right. There then follows a series of similar questions like 'Press Above' etc.. If the child does not make more than two mistakes in a row, there is a pretty picture at the end. Great, so why do I not now have a single figure handicap at golf?

Firstly, my daughter got nearly all the questions correct first time! More importantly she is unable to read (age range 3 years?) which means that I have to be present because she has no idea what to do until she is shown for the first time. Having to stay with her means I have to listen to the soundtrack which I find intensely annoying but which she loves(!) and I have a nasty feeling that by the time she can read and be left alone, she will not be interested in something so simple.

The games are around £19 each and are so simple you wonder why you did not write them yourself. Remember kids will love things that you might consider too simple.

At that price I was very disappointed. My daughter was entertained but I had to be present all the time which defeated the original purpose.

**ENTER PROTO**

So I tried the 'PROTO' series from Maplin Electronics consisting of three cassettes, or disks, containing in total 10 semi-educational games. They were available at a special price of £9 for the lot! The cassettes were individuallly boxed and each with their own 16 page booklet which is written so clearly that I could trust my wife to load the games.

Games is just what they are. Not scaled down versions of popular adult games but 'arcade' type games specially written for children. They range from extremely easy to almost adult level each with several levels of difficulty. The series has therefore a wide age appeal from 4 to 10 years. Whilst Juggles is a question and answer session with no movement on the screen, all the games in the PROTO series are joystick controlled with movement, better sound, nice colours and, more importantly, a 'goal', usually a score. One minor drawback is that you load the cassette versions with RUN "C:" and therefore have to wait some time for them to load.

Verdict - outrageously inexpensive but excellent quality. My daughter loves them and will sit by herself quite happily for a long time. So maybe now I can get out onto the golf course. First though I must try to get to that last warp.

The foot starts tapping ..... *ZAP!* ..... one more life ..... *SCORE 213,000* ..... nearly there. Suddenly, "Daddy......". You see she only gets the urge to play on the computer when I'm using it! Oh well, a fifteen handicap is not too bad. Anyone want to buy a copy of Gyruss?

**Reviewed by C. Laing**

## OIL's WELL ..... SierraVision ..... ROM or Disk ..... £18.95

If you have ever fancied following in the footsteps of the Ewings or the Carringtons this game from SierraVision gives you that chance. Mind you, you will have to use a heck of a lot of imagination!

OIL'S WELL is, basically, a maze game. Your gusher has come in and you are on the way to becoming a multi-millionaire but first you must mine the oil rich deposits of petromin that lie underground. You do this by sinking your drill bit and then guiding it around the maze with a joystick to gobble up all the dots. The drill bit lays a pipe as it moves which causes problems as the pipe is liable to be attacked by the 'oozies'. These cross the maze at random intervals from left to right and vice-versa. Luckily they have no defence against your drill bit and you can gobble them up for extra points. Pressing or holding down the fire button allows you to retract your pipe to avoid the oozies. Bombs (yes, bombs!) wander across the screen occasionally. They will destroy your drill bit but they pass harmlessly through your pipe.

Naturally it wouldn't be a maze game without the customary 'secret weapon' or power pill as they are more readily known. You get one of these on each level of play and it has the effect of slowing the oozies down for a limited period of time, giving you the chance of clearing the maze unhindered. Meanwhile you gain large bonus points for collecting the golden goblets which appear rather infrequently.

You must complete each individual maze before the timer runs out. Once you do this, you advance on to the next level of play and a new maze. There are 8 different mazes in all and after each is completed, extra buildings are added to the construction site at the top of the screen. By the end of level 8 there is quite a huge complex up there. That's if you manage to get that far!

OIL'S WELL is one of my favourite games at the moment. It has more variety than the average maze game and, once you get used to it, it is not really all that difficult to play. On the minus side, it is rather pricey at £18.95.

Datamost have a similar game on the market called ARDY THE AARDVARK but OIL'S WELL is the better and more playable of the two. It sure beats watching Dallas anyday, but then doesn't anything??

**Reviewed by Jim Short**

## GHOSTBUSTERS
**Activision**
**DISK only**
**£14.95**




# GHOSTBUSTERS




*Reviewed by Jim Short*




**Drawing by Ronald Hill**




You've seen the film and bought the hit record, now play the game! Activision's latest release follows the film plot faithfully so if you have seen the film, you know exactly what to expect.

The game fires up with an impressive title screen complete with Ghostbusters symbol and theme music which is first class. The lyrics are displayed so that you can sing along if you wish. If you are by now heartily sick of the Ray Parker Jnr. original press start and play the game!

Ghostbusters is played over three different screens - the street map, the driving screen and finally the ghost-busting screen. Before you start you must purchase a vehicle with the money credited to you by the bank and load it up with your ghostbusting equipment. You then advance to the street map screen and have to guide your miniature ghost-busters symbol around the criss-cross pattern of streets searching for buildings which are being haunted by ghosts. Fortunately, the buildings flash crimson when a ghost is present so this task is not particularly difficult. After selecting the building via the joystick, you progress through the driving screen where you guide your vehicle across the city to the haunted building. Whilst on your way you must vacuum up any 'Street Roamers' that you encounter. If it is beginning to sound complicated, brace yourself - there is more to come!

When you reach the building you must drop one of your traps on the ground and try to entice the ghost over it with the aid of your laser backpacks. This is quite a tricky operation as the ghost has no intention of being caught quite so easily and flits about the screen in quite an erratic manner in a bid to avoid you. Once you think the ghost is in a catchable position you must press the trigger to release the trap and, hopefully, it will spring up and catch the ghost. If you miss the ghost will swoop down and knock out one of your men before disappearing. You begin with three men and you need at least two men to function properly so missing a ghost on consecutive occasions means a return to GHQ for extra back-up men. You will also have to return to GHQ periodically to empty your traps and replenish your backpack power.

All the time the game is in progress, the city's 'PK Energy' is mounting up at the bottom of the screen. You must keep a sharp eye on this as the dreaded Marshmallow Man appears when the PK Energy is in excess of 5000. He will attempt to stomp down the buildings which, in turn, will cost you money to repair, so you must stop him at all costs by laying ghost-bait to entice him away from the buildings. The Mayor of the city will award you 2000 dollars each time you foil the Marshmallow Man but you will lose 4000 dollars each time you allow him to stomp down a building.

Catching a ghost earns you a set amount of money. The idea is to try and make more money than you started with and you have to do this before the city's PK Energy level reaches 9999. If you manage it you will be given the chance to enter the Temple of Zuul, from where the ghosts emanate, and close the portal to the spirit world. This involves the frustrating process of trying to get two of your men past a giant Marshallow Man as he guards the doorway to the Temple. If you are successful in this you will witness the closing of the portal and will receive a special commendation together with a personal Account number from the bank which you can use in future games allowing you to start with more money than usual. Scant reward for battling your way through all this!

On the surface GHOSTBUSTERS seems like a very good game, but I do have a couple of minor quibbles. Firstly there is no facility to turn off the background music. It does grate after a while and there are precious few other sounds to compensate. Secondly, the game is rather too easy and can become boring too quickly. I completed the game on only my fourth attempt and now have little incentive to play it again. The seasoned games player will have to spray money about at the start of the game purchasing as much expensive equipment as possible, useless or otherwise, in order to make the game more challenging.

Finally, GHOSTBUSTERS is available on disk only for the Atari. Yet another example of an American company ignoring the British cassette market to which this game in particular is more suited.

# THE SOFTWARE REVIEWS

## HARD HAT MACK ..... Electronic Arts ..... Disk only .....

HARD HAT MACK comes from the same company who were responsible for Pinball Construction Set and Archon. The company has a good reputation for high quality software and, in most cases, this reputation is well deserved. So what about HARD HAT MACK?

The game is basically a platform game with the action taking place on a construction site. On Level 1 MACK has to travel up and down the various girders, plugging the gaps with small metal plates which he has to rivet in place with the aid of a pneumatic drill. At the same time he must avoid the clutches of the evil Otto.

Level 2 finds MACK trying to collect all the lunch boxes at the end of the tea-break before making his way to the top of the screen on a convenient moving girder. The Vandal makes his first appearance on this level, looking a lot like 'Vivian' the punk rocker from The Young Ones. A real video-nasty if ever I saw one! On Level 3 MACK must gather up the loose bricks and deposit them in the store at the bottom of the screen. What comes after that is anybody's guess as I have not managed to complete that level.

I have to say that I found HARD HAT MACK to be a very ordinary game which does not stand up well against superior platform games like MR ROBOT and MONTEZUMA'S REVENGE. The program seems to be in Graphics 8 using artifacting for the colours which just does not work on the PAL system. The game objects are hard to make out and only become clear when you turn off the colour and play in black and white.

The trouble with setting high standards is having to maintain them and I'm afraid that Electronic Arts have not made their own grade with this one.

**Reviewed by Jim Short**

## SHADOW WORLD
## Synapse
## 32K Cass./Disk
## 1/2 Players
## (Not XL compatible)

Scrolling games are very popular on the Atari which is not surprising when you consider the powerful facilities of the Atari which enable games to run both fast and smooth. Needless to say, the scrolling in SHADOW WORLD is well up to standard. It is eight-directional but unlike almost any other game of its kind, it features split screen scrolling over different directions at the same time, but more of that later.

The idea of the game is to protect the planet Jantor, a Terran Tricasmium Colony. Tricasmium is the wonder find of the future. It powers starships and planetary defence systems but most importantly it makes replicators possible. These can duplicate anything from an atom to a starcruiser. With properties like that you can bet that there are going to be a whole bunch of nasty bug-eyed aliens who want to get their hands on it. These aliens come in the form of Rigillians who drop 'seed ships' into the atmosphere which in turn drop skimmer craft which scour the planet's surface for Tricasmium nuggets. If they find one, they bring it back to a seed ship where-upon the seed ship replicates itself and heads for the planets surface. If it reaches the surface it mutates into a coloniser which can only be destroyed by dropping a Tricasmium nugget on it. You must stop all this happening by shooting the seed ships while in the air.

Unfortunately the seed ships are constantly producing large numbers of guardian drones which will stop at nothing to kill you. Also making life difficult is the fact that if five ships reach the surface the planet will blow up.

The 1 player game involves you piloting a hornet interceptor against the Rigillians in a pretty standard version of Defender but with eight-directional scrolling, twenty times more aliens and a highly detailed landscape. A very good shootout but it tends to get impossible after the seventh wave.

The 2 player game is however totally amazing. Imagine Defender with both players playing at the same time. The top half of the screen shows players one's view and the bottom half shows the view of player two. Player one controls the hornet interceptor with the other player controlling a helicopter. Both screens scroll independently of each other in response to each players joystick control. The effect is incredible! The two players can work together or shoot it out with each other. Either way it's great fun.

SHADOW WORLD is another winner from Synapse and one of the best two player arcade style games for the Atari.

**Reviewed by Gavan Moran**

## SNOKIE
## Funsoft
## Cass./Disk
## £8.45/£11.45

SNOKIE is one of two games by the American company Funsoft which are currently available here, the other being FLAK.

SNOKIE, the character, belongs to a strange breed called sno-birds who are distantly related to the penguins. They live deep in the lands of the frozen north. They are highly intelligent and good at jumping but they cannot fly and are afraid of water.

In this game, SNOKIE's girlfriend, CARA, has been captured by the evil 'Grodies' and if SNOKIE cannot find her and rescue her in time she will be forced to marry the despicable MAX, leader of the Grodies. This is where the fun begins. SNOKIE must travel through many screens to reach CARA facing untold dangers such as snow-boulders, glacier caverns, moving ice blocks, falling icicles, ice lasers and cold rays. There are seven distinct game phases and each one is a complicated puzzle in itself. None of them are particularly easy to master and no doubt you will experience more than a little frustration as you attempt to battle your way throughout the game. On top of all this, time is very critical and you must complete each game phase before the timer runs out or lose a life. It's no picnic, this game!

I found the ICE FERRY to be the most difficult phase of the lot with the other phases not far behind! Funsoft do allow a certain amount of leeway though. They have incorporated a 'Just for Fun' mode which allows you to start the game from any phase you have completed in a previous game. You do not score any points when playing in this mode but it does give you the chance to practice the various game phases. A most welcome feature I can tell you!

If you do manage to reach CARA, prepare yourself for a shock. She is ten times the size of little SNOKIE and looks something like the penguin version of a lady wrestler. MAX is quite welcome to her if you ask me!

SNOKIE is another good 16k program and a bargain at only £8.45 on cassette and £11.45 on disk. Note that it is extremely difficult to play and may not therefore appeal to everybody. If you get a chance have a look before you buy it.

**Reviewed by Jim Short**

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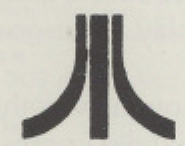
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# AND THEN THERE WERE TWO...

# HANNOVER

Most of the talk in Hannover, where the 130XE and 520ST had their first European showings, was not about what was there but more about what was not. For the uninitiated it was probably quite an eye-opener but aside from actually seeing several 520ST's and 130XE's and a few peripherals I did not really find anything new to report.

Nothing that is about what *will* be happening but it looks now as if the 130ST will *not* be released and that the 130XE may be the only 8-bit micro. Still that is not as bad as it might seem at first sight. Two excellent and powerful machines have a much better chance in the market than an assortment of machines that users may or may not be interested in.

The ATARI stand featured a small display of 130XE's and six 520ST's in various configurations hooked up to hard disks (yes!), 500k and 1Mb 3½" floppies, a synthesiser and various monitors. The 130XE is reviewed elsewhere so let's concentrate on the machines that caused the most excitement.

The 520ST really does work and is very impressive. The demos being shown were mainly sixteen colour 'low-resolution' pictures that had been designed on an 800XL and downloaded via the RS232 port. Colours were added after with a utility program and although the graphics were excellent they only really gave a hint of what might be produced by using the ST direct. There were no software packages on show although the graphics of a spreadsheet were used to demonstrate the ability to take any part of the image and blow it up to different sizes. Another demo showed a multicoloured pie chart which drifted apart in segments and smoothly rejoined. The watching crowd were impressed. Jack Tramiel was impressed too!

Two 3½" drives were shown, the 500k SF354 and the 1Mb. SF314 which both appeared to be working well. The advantage of 3½" disks was shown by an Atari employee jealously guarding a flight bag full of them which he grabbed and threw back as needed. Try to do that with a 5¼" floppy! Several prototype hard disks in adapted 1050 cases were being used although nobody would say what for. I suspect that part of the Operating System or GEM was actually on disk. There were also a number of printers but none of them were shown working so I could not tell how good or otherwise they might be.

Three monitors were on display, including one with built in disk drive that may never be produced, and they were all excellent in both style and display. That goes for all the range. It has class.

As regards the hardware, although everything was new, nothing much was 'news' but what did impress me was the way Jack Tramiel viewed the ST and the future. His image is built up as the hard-hitting, anything-goes, businessman who just wants to make money but the way he stood and admired the ST along with the general public showed that he cares about much more than the money. He *knows* that



*Jack Tramiel looks on impressed ....*

*whilst Sig Hartman demonstrates.*

the ST is a great computer and even though he may not know how it works(!) he is visibly proud of having achieved a major breakthrough in personal computing. Sure he wants to make money but he is also enjoying every minute of producing some great computers and that is important to every existing and future Atari user. He kept standing there as the demos were coming up saying "Show 'em the one *I* like. Look at that, isn't it *great*?".

# GOTO DIRECTORY

*The GOTO DIRECTORY is a guide to retailers who provide product support for Atari. Many of these retailers will supply Mail Order so if you have trouble finding a supplier, turn to the GOTO DIRECTORY.*

*Retailers who are interested in an entry in this feature are invited to contact the Editor on 0785 41153.*

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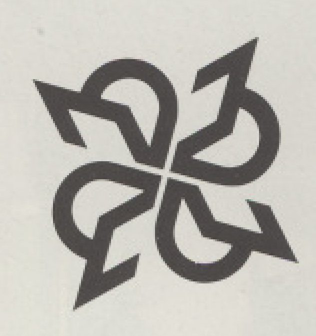
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# A-Z OF BASIC PART 3

**OPEN (O.)**
This command will open a designated channel for input or output to a peripheral, or to the screen itself. A code number is used to determine the operation to take place. The 0 is usually a dummy.

*Examples:* OPEN #2,8,0,"D: FILENAME"

The second parameter is as follows:
4=INPUT
6=DISK DIRECTORY INPUT
8=OUTPUT
9=END OF FILE (allows input from screen editor)
12=INPUT AND OUTPUT

**OR**
A logical operator. It will return 1 if any one of certain conditions are true.

*Example:* A=(B=2) OR (C=3): REM *** A=1 if either bracketted statement is true, else A=0

**PADDLE**
This will read the (numbered) paddle controller and return a number between 0 and 228. The paddles can be read directly from locations 624-631, which are the shadow locations for 53760-53767. They can be used with conditional statements (IF/THEN).

*Example:* ? PADDLE(0)

**PEEK**
Used to look into a memory location without changing what is stored there. The location asked for can be an expression or a decimal number (0-65535). A decimal number (0-255) will be returned.

*Example:* 10 P=PEEK(764): REM *** Last key pressed

**PLOT (PL.)**
Used to display a point on the graphic mode screen. The X-coordinate is given first followed by the Y-coordinate. The colour of this point is determined by the last COLOR statement, which is changed by using a suitable SETCOLOR. It is normally used with DRAWTO.

*Example:* PLOT 10,10

**POINT (P.)**
Used with NOTE in disk operations to read a file into RAM, in effect giving random access to the user. The first variable is the IOCB#, the second is the sector, and the third is the byte within the sector. More detail can be found in the DOS manual.

*Example:* POINT #2,320,12

**POKE (POK.)**
Associated with PEEK. It will store a given number(0-255) in the specified (RAM) memory location. System Reset will restore the memory locations to their default positions.

*Example:* POKE 710,32

**POP**
The ATARI stores the number of loops to be executed by a FOR/NEXT command, the return address for a GOSUB etc, in what is termed a STACK. If a GOSUB does not have a RETURN, for instance, the stack will still hold the return address. This can be cleared with POP so as not to cause confusion later. It must be used in the execution path of the program, and must follow a GOSUB not using a RETURN. It is normally the sign of a badly designed program, but is useful in debugging.

*Example:* 100 POP

**POSITION (POS.)**
This will set the cursor (on or off) to the co-ordinates X,Y on any of the graphics modes. It is normally used with PRINT, but can be used with PUT and GET.

*Example:* POS. X,Y

**PRINT (PR. or ?)**
Can be used in direct or deferred mode. The command will print exactly what is in between the quotation marks (entering quotation marks within quotation marks will cause an error), or the value of a variable at the time of asking. When used with an I/O it will print from the file designated (ie. #). Print statements can be spread over several command lines yet the writing will appear continuous when a semi-colon (;) is used to denote that the next PRINT is a continuation of the last line. Commas will cause tabbing to the next TAB position. The screen margins may need to be changed by POKE 82 and 83 to accomodate the tab positions (these can be reset by POKEing location 201 to set the TAB width). PRINT by itself will skip a line.

➚

**by Mark Hutchinson**

The normal screen editing functions can be used to move the print statement around the screen. For instance, ? "ESC-TAB ESC-TAB PAGE6", will print PAGE6 at the second tab position. The functions can themselves be printed by preceding them with the ESCAPE character. For example, PRINT "ESC-ESC ESC-TAB", will print the tab sign. For more details about this, please refer to 'FIRST STEPS', PAGE 6, issues 9 and 12.

*Examples:*
```
10 ? "THIS IS";
20 ? "ONE LINE"
30 ? "COMMAS","CAUSE","TABBING"
40 POKE 82,0:FOR N=1 TO 20:? N,
:NEXT N
49 REM *** Try this without the POKE to
change the margin.
50 ? "VALUE ="
60 ? #3, A$
```

**PTRIG**

This returns the value of the designated paddle trigger (0=pressed, 1=not pressed). Can be PEEKed from locations 636-643, the first four are shadows for 54016 and the last four are 54017.

*Example:*
```
10 IF PTRIG(0)=1 THEN ? "NO"
```

**PUT (PU.)**

Opposite of GET. This will place a byte (0-255) in the file designated by #. If it is #6, then the byte will be placed on the screen and appear as a character in the text modes, and a colour in the graphic modes. In this case PUT is normally used with POSITION.

*Example:*
```
PUT #6,ASC("A")
```

**RAD**

Opposite of DEG, will set the computer to radian mode.

**READ (REA.)**

Used with DATA. The number of READs must not be more than the amount of DATA, which can be in the form of numbers or words (strings). READ must have an associated variable or string (previously dimensioned) to place the data into. If used in the direct mode, the data must be directly associated with the program, ie. on the same command line.

*Example:*
```
10 DIM A$(6):FOR D=1 TO 5:READ A$:?
A$;:NEXT D
50 DATA READ, AND, PRINT, THE,
DATA
```

**REM (R. or .*space*)**

Used to place statements or remarks in the program for easier understanding. They do take up space and, if RAM is critical, they can be left out. Good programmers tend to use REMs on lines ending in non-zero, usually 9 (ie. 9,19,28,29 etc). Never, ever send a GOTO or GOSUB to a REM! They are usually starred, or have a single REM on the line before and after, to make them more noticeable. Anything after REM will not be executed, so you can add commands that will be valid later in the life of the program, ie. after debugging.

*Example:*
```
9 REM *** DELETE 'REM' IN LINE 10
AFTER DEBUGGING.
10 REM *** RUN "D:NEWPROG"
```

**RESTORE (RES.)**

Used with READ/DATA. The current position of the data to be read is noted by the computer. This can be reset to another line number by using RESTORE. This means that DATA need not be read sequentially. Thus, if you have several bits of data to place into a player, they can be read in any order to suit the program. Unfortunately this is too often used when not needed, ie. bad programming.

*Example:*
```
10 RESTORE 100: READ A
20 RESTORE 90: READ B
```

**RETURN (RET.)**

Used with GOSUB to return to the main program from a subroutine. The return address is held on the program stack. Trouble can occur if a subroutine is not exited correctly. See GOSUB and POP.

**RND**

Returns a randomly generated number between, but not including, 0 and 1. To get other ranges, just use a multiplier or divider. INT will delete the numbers after the decimal point to give a whole number. The number in brackets is a dummy and must be used. You can also PEEK (53770) to give a random number in the range 0-255, which is far better than INT(RND(0)*256).

*Examples:*
```
X=RND(0)
X=INT(100*RND(0))
```

**RUN (RU.)**

This will begin the execution of a program at the first line. It can be used in deferred or direct modes. It will zero all variables, close all files and channels (including sound), and eliminate all strings, arrays, and matrices. However, if the program is rerun you may find that the arrays may contain spurious data, ie. garbage. This may have to be cancelled or the proper data re-input. If a file is named, it will load and run that file. To run a program from some other entry point use GOTO with the required line number, although this can cause errors such as a file not opened yet, no GR. mode, etc.

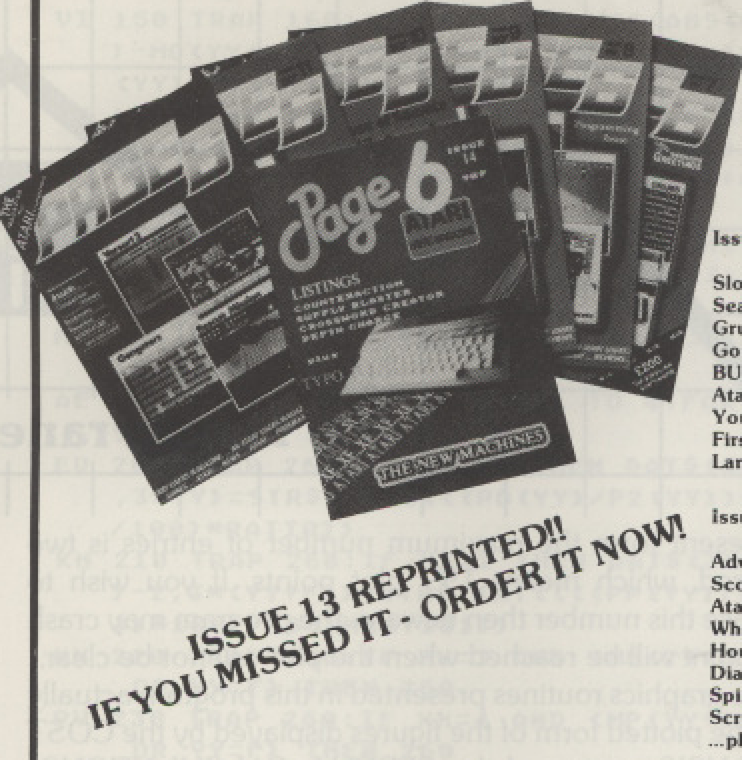
*Examples:*
```
RUN
RUN "D:NEWPROG"
```

**SAVE (S.)**

Similar to CSAVE but used with a drive. If only one drive is used then the drive identifier can be left out. Unfortunately, this type of save will not clear out unused variables, so lock-ups can still occur.

*Example:*
```
SAVE "D:NEWPROG"
10 SAVE "D2:NEWPROG"
```

**Concludes Next Issue**




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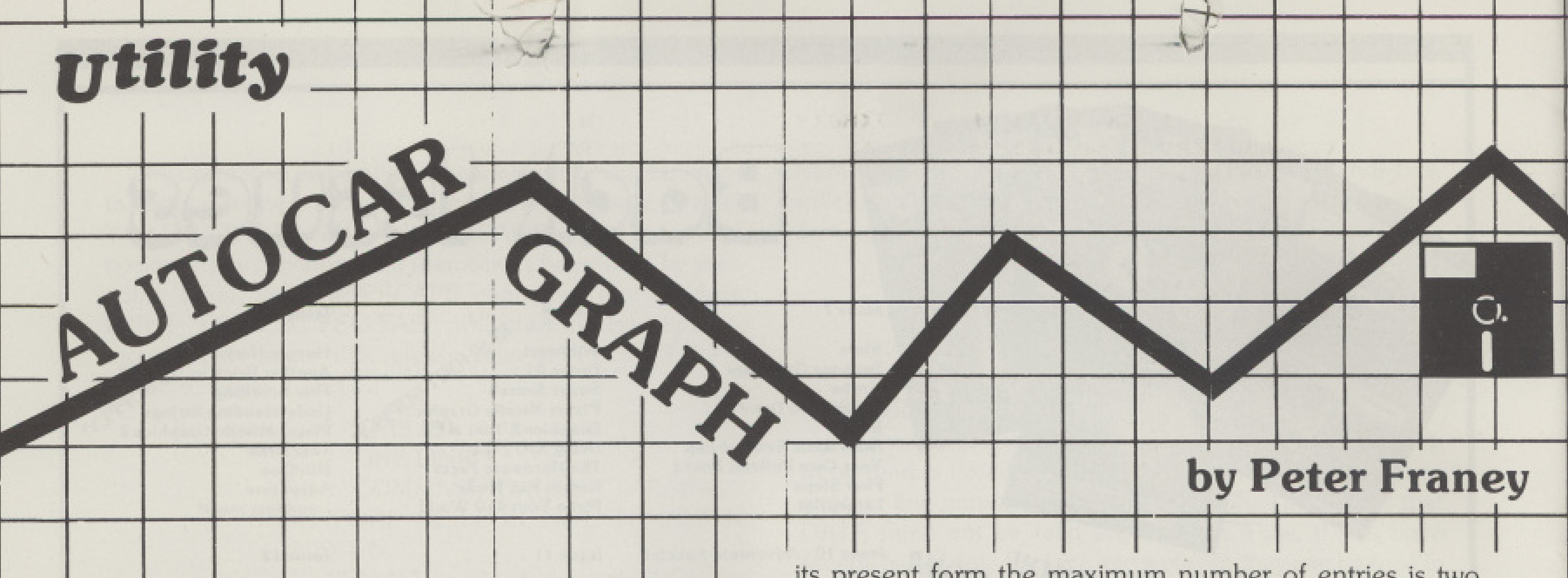
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**by Peter Franey**

*This program is the second part of the AUTOCAR listing in issue 15 although with appropriate amendments the graph functions could be used in other programs.*

This program is loaded and run from the main AUTOCAR program by selecting item two from the special calculations menu. It should be saved to disk using SAVE "D:GRAPH". Please note that there must be at least three entries in the data before the program will produce any graphs worth studying. All the graphs produced are of the 'LINE' type.

## PROGRAM OPERATION

When graphical analysis is selected, the program will display, 'LOADING DATA MENU'. When the program has loaded it will display, 'LOADING DATA'. The program will load data from the data file. Then 'CALCULATING PLEASE WAIT' will appear. The screen will then be turned off while the program calculates all plot points and ratios to fit into a graphics 24 display. The length of this time will be approximately one to two minutes. When the process is complete, the menu will appear.

There are two graphs in this routine ... 1. PRICE/GALLON AND MILES/GALLON and 2. PRICE/PINT AND MILES/PINT.

## PLOT OPTIONS AND AXES

For each set of two graphs there are two options. The first is shading. If this is chosen the program draws vertical lines from each plot point to the horizontal axis. The purpose of this is that each point plotted can be traced to the scale on the vertical axis and the value read off it. The second choice is to plot each graph separately, or on the same axis. If it is chosen to plot both graphs on the same axes, then the shading option is not as effective.

The vertical axis scale for the first graph will appear on the left side of the screen while the scale for the second, will appear on the right. All the scales are calculated by the program, with reference to the data. The horizontal axes are divided evenly into the number of plot points, and represents time, or distance, between fill up's. As more data is entered, the program will continue to divide up the horizontal axes, to allow for the number of plot points. Please bear in mind then that as the number of entries grows the plotted points will become closer together. This means that there is a limit to the number of plot points that the program can handle. In its present form the maximum number of entries is two hundred, which means 199 plot points. If you wish to increase this number then beware, the program may crash or a point will be reached when the plot will not be clear.

The graphics routines presented in this program actually give the plotted form of the figures displayed by the COST ANALYSIS section of the SPECIAL CALCULATIONS option from the main menu of the AUTOCAR program.

## EPSON PRINTER DUMP

To the prompt HARD COPY (Y/N) answer 'N' if you do not have a dot matrix printer. The routine uses bit image mode to dump the screen to the printer.

```
EH 0 REM ******************************
OK 1 REM *        AUTOCAR GRAPH        *
LQ 2 REM *             by              *
MW 3 REM *        PETER FRANEY         *
TB 4 REM *                             *
EU 5 REM * Use with AUTOCAR -issue 15  *
ED 6 REM * --------------------------- *
JA 7 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EP 8 REM ******************************
NO 9 REM
JQ 12 F=200:F1=400:F2=600:Q0=0:Q1=1
TA 15 DIM DAT$(2400),ENT$(100),Z$(Q1),MP(
   F),GP(F),PP(F),MO(F),P2(F),PO(F),ZA$(5
   0)
BA 20 FOR XX=Q1 TO F:MP(XX)=Q0:GP(XX)=Q0:
   PP(XX)=Q0:MO(XX)=Q0:P2(XX)=Q0:PO(XX)=Q
   0:NEXT XX
LC 30 DAT$(Q1)=" ":DAT$(2400)=" ":DAT$(2)
   =DAT$
SN 40 GRAPHICS 2+16:COLOR Q1:POSITION 4,4
   :? #6;"loading data"
HH 50 CLOSE #Q1:TRAP 80:OPEN #Q1,4,Q0,"D:
   CAR.DAT"
AA 60 FOR I=Q1 TO 12:INPUT #Q1;ENT$:INPUT
    #Q1;ENT$:NEXT I
HH 70 FOR I=Q1 TO F:INPUT #Q1;ENT$,MP,GP,
   PP,MO,P2,PO:MP(I)=MP:GP(I)=GP:PP(I)=PP
   :MO(I)=MO:P2(I)=P2:PO(I)=PO:NEXT I
MM 80 CLOSE #Q1:TRAP 40000
UE 90 POSITION 4,4:? #6;"calculating "
CB 100 POSITION 4,6:? #6;"PLEASE WAIT":FO
   R XX=Q1 TO 1400:NEXT XX:POKE 559,Q0
GW 110 HI=Q0:HI1=Q0:HI2=Q0:HI3=Q0
DL 120 FOR XX=Q1 TO 4:FOR YY=Q1 TO F
YW 130 TRAP 140:IF XX=Q1 AND HI<PO(YY)/P2
   (YY) THEN HI=PO(YY)/P2(YY)
AH 140 TRAP 40000:TRAP 170:IF XX=2 AND HI
   1<PP(YY)/GP(YY) THEN HI1=PP(YY)/GP(YY)
```

```
VI 150 TRAP 160:IF XX=3 AND HI2<ABS(MO(YY
   )-MO(YY+Q1))/P2(YY+Q1) THEN HI2=ABS(MO
   (YY)-MO(YY+Q1))/P2(YY+Q1)
OY 160 TRAP 40000:TRAP 170:IF XX=4 AND HI
   3<ABS(MP(YY)-MP(YY+Q1))/GP(YY+Q1) THEN
    HI3=ABS(MP(YY)-MP(YY+Q1))/GP(YY+Q1)
NW 170 TRAP 40000:NEXT YY
DA 180 NEXT XX:TRAP 185:RATIO=159/HI:RATI
   O1=159/HI1:RATIO2=159/HI2:RATIO3=159/H
   I3
HN 185 TRAP 40000:TRAP 190:RATIO1=159/HI1
   :RATIO3=159/HI3
AE 190 TRAP 40000:FOR XX=Q1 TO 4:FOR YY=Q
   1 TO F
EV 200 TRAP 260:IF XX=Q1 THEN DAT$(3*YY-2
   ,3*YY)=STR$(INT((((PO(YY)/P2(YY))*100)
   /100)*RATIO))
KH 210 TRAP 260:IF XX=2 THEN DAT$(3*(YY+F
   )-2,3*(YY+F))=STR$(INT((((PP(YY)/GP(YY
   ))*100)/100)*RATIO1))
NX 220 TRAP 260:IF XX=3 AND (MO(YY+Q1)=Q0
    OR YY=F) THEN 260
PV 230 TRAP 260:IF XX=4 AND (MP(YY+Q1)=Q0
    OR YY=F) THEN 260
MX 240 TRAP 260
ZL 245 IF XX=3 THEN DAT$(3*(YY+F1)-2,3*(Y
   Y+F1))=STR$(INT((((ABS(MO(YY)-MO(YY+Q1
   ))/P2(YY+Q1)*100))/100)*RATIO2))
MZ 250 TRAP 260
ZR 255 IF XX=4 THEN DAT$(3*(YY+F2)-2,3*(Y
   Y+F2))=STR$(INT((((ABS(MP(YY)-MP(YY+Q1
   ))/GP(YY+Q1)*100))/100)*RATIO3))
NV 260 TRAP 40000:NEXT YY
VY 270 NEXT XX:FOR XX=Q1 TO F:IF MP(XX)=Q
   0 THEN X1=XX-Q1:GOTO 290
XI 280 NEXT XX
SR 290 FOR XX=Q1 TO F:IF MO(XX)=Q0 THEN X
   2=XX-Q1:GOTO 310
WT 300 NEXT XX
EL 310 GRAPHICS Q0:POKE 710,Q0:POKE 712,4
   :POKE 709,10:POKE 752,Q1
AH 315 POSITION Q0,Q0:? "              GR
   APH DATA PROGRAM "
PZ 320 POSITION 10,4:? "PROGRAM OPTIONS:"
OM 330 POSITION 10,6:? "(1) PRICE PER GAL
   LON":POSITION 14,7:? "MILES PER GALLON
   "
VN 340 POSITION 10,9:? "(2) PRICE PER PIN
   T":POSITION 14,10:? "MILES PER PINT"
JY 350 POSITION 10,12:? "(3) RUN MAIN PRO
   GRAM":POSITION 10,14:? "(4) RETURN TO
    BASIC"
VX 355 POSITION 10,16:? "        ENTER OPTIO
   N "
UG 360 GOSUB 9000
CQ 370 IF N<>49 AND N<>50 AND N<>51 AND N
   <>52 THEN 360
GT 375 R1=N
YP 380 IF N=52 THEN GRAPHICS Q0:POKE 82,2
   :POKE 83,39:NEW
EV 390 IF N=51 THEN ? "K":GRAPHICS 2+16:P
   OSITION 4,4:? #6;"loading main":POSITI
   ON 7,6:? #6;"PROGRAM":RUN "D:CAR"
MA 392 ? "K":POSITION 8,10:? "SHADING (Y/
   N)";
UV 393 GOSUB 9000
VV 394 IF N<>89 AND N<>78 THEN 393
VQ 396 IF N=89 THEN PP1=1
UC 397 IF N=78 THEN PP1=0
AU 398 POSITION 8,12:? "INDIVIDUAL GRAPHS
    (Y/N)";
VN 399 GOSUB 9000
BW 400 IF N<>89 AND N<>78 THEN 399
VE 401 IF N=89 THEN PP2=1
TQ 402 IF N=78 THEN PP2=0
NI 408 CH=R1-48:ON CH GOSUB 410,600:GOTO
   310
YB 410 GOSUB 10000:XSCALE=X1:GOSUB 10240
FJ 420 FOR XX=Q1 TO 2:I=Q0:X=Q0:Y=Q0:GOSU
   B 9010
VF 430 FOR YY=Q1 TO X1:IF XX=Q1 THEN Y=VA
   L(DAT$(3*(YY+F)-2,3*(YY+F)))
IM 440 TRAP 455:IF XX=2 THEN Y=VAL(DAT$(3
   *(YY+F2)-2,3*(YY+F2)))
XW 450 GOSUB 10190
OK 455 TRAP 40000:NEXT YY
LG 460 IF XX=Q1 THEN ZA$="#1: PETROL--PRI
   CE PER GALLON":ZX=6:ZY=130:ZZZ=Q0:GOSU
   B 10040
WZ 470 IF XX=2 THEN ZA$="#2: PETROL--MILE
   S PER GALLON":ZX=6:ZY=140:ZZZ=Q0:GOSUB
    10040
IR 475 IF XX=1 AND PP2=1 THEN GOSUB 490:G
   OSUB 11000:? "     ANY KEY FOR NEXT CHA
   RT":GOSUB 9000:GOSUB 10240
WD 480 NEXT XX:GOSUB 490:GOTO 500
JB 490 ? "     HIGH PRICE: ";INT(HI1*100)/
   100;" HIGH MPG: ";INT(HI3*100)/100:? :
   RETURN
QB 500 GOSUB 11000:? "      ANY KEY TO E
   XIT"
FI 510 GOSUB 9000:RETURN
ZA 600 GOSUB 10000:XSCALE=X2:GOSUB 10240
LZ 610 FOR XX=Q1 TO 2:I=Q0:X=Q0:Y=Q0:GOSU
   B 9050
HQ 620 FOR YY=Q1 TO X2:TRAP 650:IF XX=Q1
    THEN Y=VAL(DAT$(3*YY-2,3*YY))
DA 630 TRAP 650:IF XX=2 THEN Y=VAL(DAT$(3
   *(YY+F1)-2,3*(YY+F1)))
XW 640 GOSUB 10190
NX 650 TRAP 40000:NEXT YY
EX 660 IF XX=Q1 THEN ZA$="#3: OIL--PRICE
   PER PINT":ZX=6:ZY=130:ZZZ=Q0:GOSUB 100
   40
DW 670 IF XX=2 THEN ZA$="#4: OIL--MILES P
   ER PINT":ZX=6:ZY=140:ZZZ=Q0:GOSUB 1004
   0
XX 675 IF XX=1 AND PP2=1 THEN GOSUB 690:G
   OSUB 11000:? "     ANY KEY NEXT CHART":
   GOSUB 9000:GOSUB 10240
ZV 680 NEXT XX:GOSUB 690:GOTO 700
RW 690 ? "     HIGH PRICE: ";INT(HI*100)/1
   00;" HIGH MPP: ";INT(HI2*100)/100:? :R
   ETURN
AH 700 GOSUB 11000:? :? "      ANY KEY T
   O EXIT"
FK 710 GOSUB 9000:RETURN
ZS 9000 CLOSE #1:OPEN #1,4,Q0,"K:":GET #Q
   1,N:CLOSE #Q1:RETURN
QK 9010 DP=Q0:ZY=156:ZX=1:IN=INT(ZY/YMARK
   ERS)+Q1:ZY=ZY-IN+Q1
QN 9019 REM USE ABBREVIATIONS NEXT LINE
AF 9020 IF XX=Q1 THEN FOR BB=1 TO YMARKER
   S-Q1:DP=DP+(HI1/YMARKERS):ZA$=STR$(INT
   (DP*100)/100):GOSUB 10040:ZY=ZY-IN:NEX
   T BB
QQ 9029 REM USE ABBREVIATIONS NEXT LINE
LO 9030 IF XX=2 THEN ZX=37:FOR BB=1 TO YM
   ARKERS-Q1:DP=DP+(HI3/YMARKERS):ZA$=STR
   $(INT(DP)):GOSUB 10040:ZY=ZY-IN:NEXT B
   B
AT 9040 RETURN
QW 9050 DP=Q0:ZY=156:ZX=1:IN=INT(ZY/YMARK
   ERS)+Q1:ZY=ZY-IN+Q1
QZ 9059 REM USE ABBREVIATIONS NEXT LINE
YX 9060 IF XX=Q1 THEN FOR BB=Q1 TO YMARKE
   RS-Q1:DP=DP+(HI/YMARKERS):ZA$=STR$(INT
```

## FREEWAY ACE! from page 19

```
JP 1440 DATA 173,49,2,133,205,160,15
XS 1450 DATA 177,204,56,233,1,145,204
GV 1460 DATA 176,9,200,177,204,56,233
QK 1470 DATA 1,145,204,136,200,200,200
VL 1480 DATA 192,96,48,231,96
OW 1490 FOR I=1638 TO 1761
MZ 1500 READ J:POKE I,J:NEXT I
ZP 1510 POKE 512,0:POKE 513,6
YR 1520 FOR I=1578 TO 1607 STEP 8
MJ 1530 FOR J=I TO I+3
TR 1540 POKE J,14:POKE J+4,52
WV 1550 NEXT J:NEXT I
YL 1560 FOR I=1608 TO 1628 STEP 8
MV 1570 FOR J=I TO I+3
XC 1580 POKE J,14:POKE J+4,6
FH 1590 NEXT J:NEXT I:POKE 54286,192
MM 1600 FOR I=1632 TO 1637
WJ 1610 POKE I,6:NEXT I
GO 1620 DATA 35,0,34,3,33,6
FI 1630 DATA 5,1,4,4,3,7
FE 1640 DATA 24,1,23,4,22,7
DF 1650 DATA 32,1,31,4,30,7
YM 1660 DATA 1,2,0,5,39,7
ZI 1670 FOR I=1 TO 5
EL 1680 READ X,Y:POSITION X,Y
QV 1690 ? CHR$(8);CHR$(10)
DP 1700 READ X,Y:POSITION X,Y
RV 1710 ? CHR$(8);CHR$(160);
GN 1720 ? CHR$(160);CHR$(10)
DY 1730 READ X,Y:POSITION X,Y
DK 1740 ? CHR$(8);CHR$(160);CHR$(160);
QU 1750 ? CHR$(160);CHR$(160);CHR$(10)
FV 1760 NEXT I
XU 1770 POKE 88,PEEK(DL+4)
ZF 1780 POKE 89,PEEK(DL+5)
PI 1790 REM *** set up p/m graphics ***
CW 1800 DIM CAR$(40),WHEEL$(40)
PB 1810 I=PEEK(106)-32:POKE 54279,I
UI 1820 POKE 53277,3:POKE 623,33
WU 1830 VT=PEEK(134)+256*PEEK(135)
MR 1840 AT=PEEK(140)+256*PEEK(141)
VD 1850 OF=256*I-AT+1024
KU 1860 HI=INT(OF/256):LO=OF-256*HI
DE 1870 POKE VT+2,LO:POKE VT+3,HI
PL 1880 PLAY$(1)=CHR$(0)
WU 1890 PLAY$(1024)=CHR$(0)
DQ 1900 PLAY$(2)=PLAY$
VI 1910 DATA 0,0,0,0,0
ST 1920 DATA 24,24,24,60,60,60,60,60
SS 1930 DATA 60,60,60,60,60,60,60,126
BI 1940 DATA 126,126,126,126,126,126
IJ 1950 DATA 90,90,90,90,126,126,126,60
BP 1960 DATA 60,24,24
TE 1970 FOR I=1 TO 40:READ J
RG 1980 CAR$(I)=CHR$(J):NEXT I
WG 1990 DATA 0,0,0,0,0
TA 2000 DATA 0,66,66,66,66,66,66,66
MT 2010 DATA 0,0,24,24,24,24,24,0,0,0,0
FE 2020 DATA 0,255,255,255,255,255,255
MT 2030 DATA 255,255,255,255,195,195
CG 2040 DATA 195,195
SH 2050 FOR I=1 TO 40:READ J
EB 2060 WHEEL$(I)=CHR$(J):NEXT I
AU 2070 PLAY$(697,736)=CAR$
TY 2080 PLAY$(953,991)=WHEEL$
QH 2090 POKE 53250,114:POKE 53251,114
GZ 2100 POKE 53258,3:POKE 53259,3
KQ 2110 POKE 706,28:POKE 707,2
ZU 2120 POKE 559,62:RETURN
```

●

## AUTOCAR GRAPH

```
   (DP*100)/100):GOSUB 10040:ZY=ZY-IN:NEX
   T BB
RC 9069 REM USE ABBREVIATIONS NEXT LINE
IA 9070 IF XX=2 THEN ZX=35:FOR BB=1 TO YM
   ARKERS-Q1:DP=DP+(HI2/YMARKERS):ZA$=STR
   $(INT(DP)):GOSUB 10040:ZY=ZY-IN:NEXT B
   B
BF 9080 RETURN
GU 10000 XCOORD=319:YCOORD=159
DK 10010 XSCALE=F:YSCALE=40
HK 10020 XMARKERS=4:YMARKERS=5
UH 10030 POKE 82,Q0:RETURN :REM ZX & ZY &
    ZZZ FOR PLOTTING TEXT
WN 10040 REM DISPLAY TEXT IN GR.8
FP 10050 ZL=PEEK(560)+PEEK(561)*256
SR 10060 ZM=PEEK(ZL+4)+PEEK(ZL+5)*256
JC 10070 FOR ZW=Q1 TO LEN(ZA$)
OA 10080 ZT=57344+((ASC(ZA$(ZW,ZW))-32)*8
   )
TC 10090 ZC=ZM+ZY*40+ZX+(ZW-Q1)
XV 10100 FOR ZR=Q0 TO 7
RK 10110 POKE ZC+ZR*40,PEEK(ZT+ZR)
CQ 10120 NEXT ZR
HY 10130 ZY=ZY+ZZZ
FL 10140 NEXT ZW
DU 10150 RETURN
UO 10160 REM READ DATA
FZ 10190 IF Y>YSCALE THEN RETURN
IB 10200 Y=YCOORD-Y*(YCOORD/YSCALE)
SA 10210 X=X+XCOORD/XSCALE
XA 10220 IF I=Q0 THEN PLOT X,Y:IF PP1=1 T
   HEN DRAWTO X,YCOORD
RC 10230 DRAWTO X,Y:IF PP1=1 THEN PLOT X,
   YCOORD:DRAWTO X,Y
NX 10235 I=I+Q1:RETURN
DR 10240 YSCALE=40:REM DRAWTO AXES
QM 10250 GRAPHICS 8:COLOR Q1:POKE 710,Q0:
   POKE 752,Q1
BP 10260 PLOT Q0,Q0:DRAWTO 0,YCOORD:DRAWT
   O XCOORD,YCOORD:DRAWTO XCOORD,Q0:DRAWT
   O Q0,Q0
GD 10270 FOR I=Q0 TO YCOORD STEP (YCOORD+
   Q1)/YSCALE:PLOT 4,I:DRAWTO Q0,I:NEXT I
   :REM LEFT
HZ 10280 FOR I=Q0 TO YCOORD STEP (YCOORD+
   Q1)/YSCALE:PLOT 315,I:DRAWTO XCOORD,I:
   NEXT I:REM RIGHT
JA 10290 FOR I=Q0 TO XCOORD STEP XCOORD/X
   SCALE:PLOT I,4:DRAWTO I,Q0:NEXT I:REM
   TOP
BS 10300 FOR I=Q0 TO XCOORD STEP XCOORD/X
   SCALE:PLOT I,155:DRAWTO I,YCOORD:NEXT
   I:REM BOTTOM
BK 10310 REM DRAW X & Y MARKERS
FU 10320 FOR I=Q0 TO YCOORD STEP YCOORD/Y
   MARKERS:PLOT 8,I:DRAWTO Q0,I:NEXT I:RE
   M LEFT
JO 10330 FOR I=Q0 TO YCOORD STEP YCOORD/Y
   MARKERS:PLOT 311,I:DRAWTO XCOORD,I:NEX
   T I:REM RIGHT
CL 10340 FOR I=Q0 TO XCOORD STEP XCOORD/X
   MARKERS:PLOT I,7:DRAWTO I,Q0:NEXT I:RE
   M TOP
IY 10350 FOR I=Q0 TO XCOORD STEP XCOORD/X
   MARKERS:PLOT I,152:DRAWTO I,YCOORD:NEX
   T I:REM BOTTOM
EL 10360 YSCALE=160:RETURN
NE 11000 ? "    HARD COPY (Y/N)";:GOSUB 9
   000:IF N=78 THEN ? :RETURN
QF 11005 ? :TRAP 11010:DIM TABZ$(15),XOUT
   $(192),TST$(192)
KC 11010 TRAP 40000:TABZ$="
   ":TST$="♥":TST$(192)="♥":TST$(2)=TST$(
   1)
AN 11030 OPEN #7,8,0,"P:":TRAP 11180:PRIN
   T #7:PSV=PEEK(559):POKE 559,0:A=PEEK(8
   8)+256*PEEK(89)
```

►

**ATARIWRITER:** Is there a way to access the International characters when creating a file with Atariwriter? W.M.Wan Yahya, 49, Fenwick Close, Hulme, Manchester, M15 6EF

**BACK ISSUES:** PAGE 6 issues 1 & 2 wanted. R, Numan, 107, Carr Lane, Acomb, York, YO2 5HN

**PAGE 6:** Wanted - issues 1 - 6. Any condition. Photocopies or will photocopy and return. Please help! Shaun McCrindle, 74a Briarhill Road, Prestwick, KA9 1HY or phone 0292 74877 after 6 p.m.

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**MASK OF THE SUN:** I am stuck. What do you do in the Boulder Room? Also how do you get out of the dark room in Dallas Quest. Omar El Sherif - as above.

**ATARI BADGES ETC.:** Anyone out there who can tell me/sell me any ATARI logo type badges? I live in the sticks but there are loads of Atari users out there so .... I want to boast about my system. O.K.? Dave Will Henderson, 2, Gunknowe Bank, Tweedbank, Galashiels, Selkirkshire, Scotland, TD1 3SE

**FOR SALE:** Atari 800XL, 1020 printer and 1010 recorder plus lots of software and lots of manuals and programming books. ALL of this for only £220 o.n.o. Please contact Christopher on 0792 898363 evenings and weekends.

**PEN-PAL:** Atari pen-pal wanted with view towards general discussion on programming and on Atari software etc. S.Smith, 63, Innes Street, Inverness, IV1 1NR

**MACROTRONICS PRINTER INTERFACE:** For Atari 400/800 with disk and cassette drivers. Uses joystick ports 3 & 4. £30. John Bennett 091 2685196

**DISK AUTO-BOOT:** I have recently purchased a disk drive and would like some of my BASIC programs to auto-boot. Can someone let me know how to do this? Geoff Pearce, 39, Hillside Road, Harpenden, Herts.

*And finally...*

**EVERYTHING YOU WANTED TO KNOW...?:** I have over 3 years issues of COMPUTE! to dispose of and 2 years or more of Computer & Video Games from issue no.1. Will sell or exchange for what have you. I have all the programs from these mags on tape. Several hundred. I am a retired person and spend enjoyable time typing in programs. Does anyone want to use my time? I also have ANTIC and ANALOG from issue 1 but at the moment I do not wish to part with these but will supply any information from them on receipt of a s.a.e. or tape with return postage etc. Finally, some time ago PCN published a series of games called Casino which I cannot get to work. Can anyone help? H.W.Clark, 32 Halsham Crescent, Barking, Essex. Tel: 01 594 5768

## AUTOCAR GRAPH

```
HE 11040 IF PEEK(1536)=104 THEN 11080
MN 11050 RESTORE 11060:FOR K=1536 TO 1577
   :READ X:POKE K,X:NEXT K
IR 11060 DATA 104,104,133,204,104,133,203
   ,104,133,206,104,133,205,162,191,160,0
   ,177,203,72,138,168,104,145,205
WR 11070 DATA 202,240,13,24,165,203,105,4
   0,133,203,144,234,230,204,208,230,96
SK 11080 PRINT #7;CHR$(27);CHR$(65);CHR$(
   8)
PH 11090 XOUT$=CHR$(174):XOUT$(192)=CHR$(
   174):XOUT$(2)=XOUT$(1)
CP 11100 PRINT #7;TABZ$;CHR$(27);CHR$(75)
   ;CHR$(192);CHR$(0);XOUT$
OC 11110 FOR J=A TO A+39:XOUT$=TST$:Z=USR
   (1536,J,ADR(XOUT$))
IW 11120 IF XOUT$=TST$ THEN ? #7;TABZ$:GO
   TO 11140
DB 11130 PRINT #7;TABZ$;CHR$(27);CHR$(75)
   ;CHR$(192);CHR$(0);XOUT$
GQ 11140 NEXT J
IF 11150 XOUT$=CHR$(117):XOUT$(192)=CHR$(
   117):XOUT$(2)=XOUT$(1)
DN 11160 PRINT #7;TABZ$;CHR$(27);CHR$(75)
   ;CHR$(192);CHR$(0);XOUT$
BP 11170 PRINT #7;CHR$(27);CHR$(64):PRINT
    #7:POKE 559,PSV:TRAP 40000:CLOSE #7:R
   ETURN
QA 11180 PRINT #7;"ERROR-";PEEK(195);" AT
      LINE ";PEEK(186)+256*PEEK(187)
```

## Turn the Tables from page 34

```
HA 15050 GOSUB 1300
EF 15060 RETURN
QA 20000 REM INSTRUCTIONS AND OPTIONS
KK 20010 PRINT "K":POKE 752,1:POSITION 11
   ,1:PRINT " Turn the Tables "
RL 20100 ? :? :? "           How many kinds of
    object?":? :? "              4    5    6
    7":TRAP 20010
DZ 20110 ? :? "The fewer kinds of object,
    the larger":? "the numbers to count."
   ;:INPUT KINDS
TJ 20115 IF KINDS<4 OR KINDS>7 THEN 20010
NJ 20120 ? :? " How many diamonds to star
   t building?":? :? "Choose a number ove
   r 9."
EQ 20130 ? "After that, each stage will n
   eed ten":? "extra diamonds.";:INPUT BA
   SE
MS 20140 IF BASE<10 OR BASE>90 THEN POSIT
   ION 2,18:PRINT "     ";"↑↑↑↑↑":GOTO 2013
   0
HL 20150 OLDSC=BASE-10
PV 20160 ? :? "'Kim's Game' Memory Test O
   ption  Y/N?":INPUT YN$
SW 20170 IF YN$<>"Y" AND YN$<>"y" THEN 14
LQ 20180 MEMTEST=1:? :? "How many seconds
    to memorise Table";:INPUT SECS
MS 20200 PRINT "OK:Player will see Table
   for ";SECS;" secs":FOR DEL=1 TO 500:NE
   XT DEL:GOTO 14
```

# Beyond ATARI

*A series by John J. Smith looking at aspects of communication*

## FIRST TELETEXT

When BBC and ITV teletext software was being experimentally transmitted during Christmas 1981 I stumbled across it accidently on a decoder I had built at that time.

The first telesoftware transmissions were made in February 1977 using simple programs in the form of machine code, employing pages of ASCII characters. From 1977 to 1980 further development was carried out and with the co-operation of Mullard, who built 12 specially converted TV sets supplied to Brighton Polytechnic and others around the country, the refined system of Teletext and Telesoftware appeared. Unfortunately for those who do not have a BBC/ACORN computer it cannot be used. ITV seemed to have abandoned the idea and CHANNEL 4 now seems to have opted for Commodore and Sinclair for their photon light pen type downloader. Alas it would seem that once again an opportunity of standardisation has been missed.

A similar thing happened with the original 1974 Kansas City cassette interface which was based on years of hobbyists' experiences and discussions and which several manufacturers started using but then other manufacturers came up with different methods. Even the speed of recording the data on cassette varied from 300 / 600 / 1100 / 1200 baud depending on which micro computer you had and this often meant that you had to buy a specially adapted cassette recorder from the makers of the computer. The MSX idea might have worked but it has come too late.

## DATA ON THE RADIO?

A few years ago the BBC did some tests with a system called S.C.A. (known as Storecasting in the U.S.A.) which is a system thought of long before Teletext existed. This is a method of putting a subcarrier onto a radio signal (VHF/FM) which sits on the sideband where space is available and can contain additional background music. In America, and increasingly here, shops or stores, hotels, resturants, even buses, have background music. Sometimes tapes are used but it is often cheaper and certainly more convenient to use the radio. For background music in, say, a restaurant or hotel you do not want to be blasted with the top 40 hits and have adverts and so on disturbing you, but nice gentle background music is acceptable. The hotel or resturant rents or buys a decoder to separate part of the signal so they only hear the background music. You or I, who may be tuned to exactly the same radio station, will hear the usual non stop top 40 with jingles adverts and all.

The system is similar in some respects to Teletext. It is there all the time buried in the signal but you don't know it's there unless you have a decoder. Many of the American radio stations have been doing this for about 25 years so why hasn't anybody thought of using this to broadcast database type information?. I asked BBC if they had carried out any "teletext like" transmissions on radio using this SCA technique and received a brief reply saying that they had not but they gave some brief details of 1975/1976 tests which used music. I understand that these tests were tried using the normal 41KHS mono and 67KHS stereo sidebands as used in U.S.A. but in U.K. our de-emphasis network inside the sets is different so people who tune to the normal signal had a variety of problems such as crosstalk and sideband splatter (nasty!). It soon became apparent that with even a low injection rate of signal it was not workable in U.K. Maybe we missed the opportunity of suggesting improved modifications to set manufacturers before the numbers of VHF sets grew to today's proportions. I am disappointed especially as the system of decoding was so simple.

## A NEW BBC SYSTEM

Things may however be looking up and recent discussions with the BBC reveal that they have not been idle and a system called RDS (RADIO DATA SYSTEMS) has not only been built and tested using a microprocessor built into a radio but was displayed at the Ideal Home Exhibition in March 1985. I understand that only 2 receivers have been built but tests have been carried out in various parts of the country and are currently continuing on Radio London and BBC Radio 2, 3 and 4. The BBC are said to be pleased with how things are going.

The RDS system operates on a carrier of 57KHz embedded in the main body of the signal similar to SCA but the similarity ends there. RDS can be likened to Teletext because it contains a digital signal which cannot carry extra music (only SCA can do that) but which has many other uses. Amongst those that have proved to be workable are signals that contain information to switch your car radio to another transmitter as you drive from one end of the country to the other. You would still hear uninterrupted Radio 4 for example even though that station is transmitted on different frequencies in different areas. As you get further away from one transmitter and the signal gets weak the receiver is automatically switched to another transmitter broadcasting the same signal. This is similar to the cellular radio concept now being set up for 2 way communications. Another thing that it can do it to receive instant news of, say, an accident on the motorway or sudden bad weather. At the moment the information appears on a small screen like a caculator type display and appears no matter what station you are listening to but it could also actually switch the radio on if important news is being broadcast.

## A WORLD STANDARD?

One very important piece of news is that this system has in fact been accepted as the European standard and maybe, one day, it will become a world standard. Congratulations to the BBC and I hope that those that have the prototypes will not take too long to get them to the market place.

Finally now that 625 line UHF are the only TV transmissions in U.K. and the old TV 405 line band 1 (49MHZ) and band 3 (approx 200MHZ) have at long last been closed down, what, if anything, is being done with these available frequencies? Maybe we could have a DATA channel to pick up information on our micros?

Beam me down the latest issue of PAGE 6 magazine Scottie!




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